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Introduction

The South Carolina Department of Health and Environmental Control (SCDHEC) initiated its first watershed planning activities as a result of a U.S. Environmental Protection Agency (USEPA) grant in June of 1972. These activities were soon extended by §303(e), "Federal Water Pollution Control Act Amendments of 1972", U.S. Public Law 92-500. In 1975, the SCDHEC published basin planning reports for the four major basins in South Carolina. The next major planning activity resulted from §208 of the Federal Water Pollution Control Act, which required states to prepare planning documents on an areawide basis. Areawide plans were completed in the late 1970's for the five designated areas of the State and for the nondesignated remainder of the State. To date, these plans or their updated versions have served as an information source for water quality management.

During the past decade, special water quality initiatives and Congressional mandates have diverted attention and resources from comprehensive water quality assessment and protection. The Bureau of Water Pollution Control initiated watershed planning to reemphasize a coordinated approach to river basin development and water quality management. Watershed-based management allows the Department to address Congressional and Legislative mandates in a coordinated manner and to better utilize current resources. The watershed approach also improves communication between the Department, the regulated community, and the public on existing and future water quality issues (SCDHEC 1991a).

Purpose of the Watershed Water Quality Management Strategy

By definition, a watershed is a geographic area into which the surrounding waters, sediments, and dissolved materials drain, and whose boundaries extend along surrounding topographic ridges. Watershed-based water quality management recognizes the interdependence of water quality related activities associated with a drainage basin including: monitoring, problem identification and prioritization, water quality modelling, planning, permitting, and other activities. The Bureau of Water Pollution Control's Watershed Water Quality Management Program integrates these activities by watershed, resulting in watershed management plans and implementation strategies that appropriately focus water quality protection efforts. While an important aspect of the strategy is water quality problem identification and solution, the emphasis is on problem prevention.

Five major drainage basins divide the State along hydrologic lines and are subdivided into management units. A Watershed Water Quality Management Strategy will be created for each of the five basins and will be updated on a five-year rotational basis. This will allow for effective allocation and coordination of water quality activities and efficient use of available resources. The watersheds described in this strategy document focus on the Saluda-Edisto Basin, which will be updated in 1998.

The watershed-based strategy fulfills a number of USEPA reporting requirements including various activities under §303(d), §305(b), §314, and §319 of the Clean Water Act (CWA). Section 303(d) requires the development of a list which identifies waters not meeting applicable water quality standards and indicates where total maximum daily load (TMDL) development is applicable. Section 305(b) requires that the State biennially submit a report that includes a statewide water quality assessment and description of the State's

Water Pollution Control programs. The Clean Lakes section (§314) requires that the State submit a biennial report that identifies, classifies, describes and assesses the status and trends in water quality of publicly owned lakes. The watershed plan is a logical evaluation, prioritization, and implementation tool for nonpoint source (§319) requirements. Nonpoint source best management practices (BMPs) can be selected by identifying water quality impairments and necessary controls, while considering all the activities occurring in the drainage basin.

The strategy also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed will be consolidated and presented to the public in groups, rather than one at a time, allowing the Department to realize a resource savings, and the public to realize an information advantage.

Saluda-Edisto Basin Description

The ***Saluda-Edisto Basin***, totally contained within the State of South Carolina, encompasses some 4 million acres and incorporates the Saluda, Congaree, and Edisto River Basins within 59 watersheds. Geographic regions range from the Blue Ridge to the Coastal Zone. There are a total of 8,187.3 stream miles in the Saluda-Edisto Basin and 116.0 square miles of estuarine areas.

The ***Saluda River Basin*** covers 2,568 square miles and contains 22 watersheds with geographic regions that extend from the Blue Ridge (mountain) to the Piedmont. The Saluda River Basin is described in Watershed Management Units 0201 and 0202, and encompasses 1,643,360 acres of which 9.4% is urban land, 16.0% is agricultural land, 10.9% is scrub/shrub land, 0.4% is barren land, 58.9% is forested land, and 4.3% is water (SCLRCC 1990). The urban land is comprised of the Cities of Greenville and Columbia, and to a lesser extent the Cities of Laurens and Newberry. There are a total of 2,761.5 stream miles in the Saluda River basin.

The Saluda River is formed from the confluence of the South Saluda River and the North Saluda River and flows past the City of Greenville. Further downstream, the Reedy River and Rabon Creek drain into the Saluda River to form the headwaters of Lake Greenwood. The Saluda River then flows through Lake Greenwood and together with the Little Saluda River and the Bush River forms the headwaters of Lake Murray. The Saluda River emerges from the Lake Murray dam and joins the Broad River Basin at the City of Columbia to form the Congaree River. The Broad River Basin is addressed in year five of the Bureau's five-year basin cycle.

The ***Congaree River Basin*** is described in Watershed Management Unit 0202 and encompasses 735 square miles and 7 watersheds. The Congaree River Basin is predominately within the Sandhills region of the State, but giving way to the Upper Coastal Plain region near its confluence with the Catawba-Santee Basin. Of the 470,483 acres in the Congaree River Basin, 14.8% is urban land, 11.5% is agricultural land, 3.7% is scrub/shrub land, 0.3% is barren land, 55.0% is forested land, 12.0% is forested wetland, 0.1% is nonforested wetland, and 2.5% is water (SCLRCC 1990). The urban land percentage is comprised chiefly by the Greater Columbia Metropolitan area. After the confluence of the Broad and Saluda Rivers, the Congaree River flows southeasterly for 50 miles and enters the Catawba-Santee Basin. There are a total of 1,073.5 stream miles in the Congaree River Basin. The Catawba-Santee Basin is addressed in year three of the Bureau's five-year basin cycle.

The ***Edisto River Basin***, described in Watershed Management Unit 0203, originates in the Sandhills region and flows through the Upper and Lower Coastal Plain Regions and into the Coastal Zone region. The Edisto River Basin encompasses 30 watersheds and 3,200 square miles of which 2.0% is urban land, 21.4% is agricultural land, 13.6% is scrub/shrub land, 0.5% is barren land, 46.0% is forested land, 12.1% is forested wetland, 2.0% is nonforested wetland, and 2.4% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Orangeburg and Walterboro. There are a total of 4,352.2 stream miles in the Edisto River Basin, and 116.0 square miles of estuarine areas.

The Edisto River is formed from the confluence of the North Fork Edisto River and the South Fork Edisto River. Several large swamp systems drain into the Edisto River, most notable is the Four Hole Swamp

which enters the river near Givhans Ferry State Park. Further downstream, the Edisto River merges with the Dawho River to form the South Edisto River and North Edisto River which drain to the Atlantic Ocean.

Numerous studies, both ecological and water quality related, have been conducted in the Saluda-Edisto Basin. The former S.C. Water Resources Commission, with the support of several State agencies, produced an ecological characterization of the Edisto River Basin which stressed natural resource conservation. An ongoing Edisto River Basin task force has been set up to guide local planning in the basin with an emphasis on public input in the planning process. The Santee-Cooper River Basin Project, within SCDHEC, conducted several water quality-related research studies in the basin that include assessments of Lake Murray and the Congaree River. The Department has also conducted numerous water quality-related studies associated with potential problem areas such as the Reedy River, Lake Greenwood, Wilson Creek, Bush River, Camping Creek, and Twelvemile Creek. These studies also provided data necessary to model point source discharges to the streams.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service (USDA 1982). The MLRAs are physiographic regions that have soils, climate, water resources and land uses in common. The physiographic regions that define South Carolina are as follows.

The **Blue Ridge** is an area of dissected (separated by erosion into many closely spaced valleys), rugged mountains with narrow valleys dominated by forests; elevations range from 1,000 to 3,300 feet.

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms and orchards; elevations range from 375 to 1,000 feet.

The **Sand Hills** are an area of gently sloping to strongly sloping uplands with a predominance of sandy areas and scrub vegetation; elevations range from 250 to 450 feet.

The **Upper Coastal Plain** is an area of gentle slopes with increased dissection and moderate slopes in the northwestern section that contain the state's major farming areas; elevations range from 100 to 450 feet.

The **Lower Coastal Plain** is an area that is mostly nearly level and is dissected by many broad, shallow valleys with meandering stream channels; elevations range from 25 to 125 feet.

The **Coastal Zone** is a mostly tidally-influenced area that is nearly level and dissected by many broad, shallow valleys with meandering stream channels; most of the valleys terminate in tidal estuaries along the coast; elevations range from sea level to about 25 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina (provided by the former SC Land Resources Conservation Commission-SCLRCC 1990) was derived from SPOT multispectral satellite images using image mapping software to inventory the state's land classifications, which are as follows.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture and orchards, and may include some grass cover in Urban, Scrub/Shrub and Forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in the Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from Scrub/Shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches and unvegetated flats) and man-induced (rock quarries, mines and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series together comprising over 40% of the land area, were recorded for each watershed in percent descending order. The dominant individual soil series for the Saluda-Edisto Basin are described as follows (USDA 1963-1990).

Ailey soils are well drained loamy and sandy soils with clayey or loamy subsoil.

Albany soils are deep, somewhat poorly drained soils with sandy to loamy subsoil on nearly level terrain.

Alpin soils are well drained and excessively drained, sandy soils with a loamy or sandy subsoil.

Appling soils are well drained, deep soils, brownish to red, firm clay in the main part of the subsoil, found on narrow to broad ridges.

Ashe soils are shallow to moderately deep, well drained to excessively drained soils in steep areas.

Blaney soils are nearly level to strongly sloping, excessively drained and well drained soils, some sandy throughout and some with a loamy subsoil and a fragipan on coastal plains.

Bohicket soils are very poorly drained soils, clayey throughout or mucky and underlain with clayey layers, frequently flooded.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Chastain soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Chewacla soils are nearly level, somewhat poorly drained and well drained soils.

Chiple soils are moderately to excessively well drained soils, sandy throughout, on high ridges.

Chisolm soils are deep, well to moderately drained soils with sandy to loamy subsoil on nearly level to gently sloping terrain.

Congaree soils are nearly level, well drained soils that are predominantly loamy throughout, or flood plains.

Daleville soils are nearly level, poorly drained soils, with silty loam in slight depressions and drainageways on upland terraces.

Davidson soils are deep, gently sloping to strongly sloping, well drained to somewhat poorly drained soils with a loamy surface layer and a clayey subsoil.

Dorovan soils are deep, level, very poorly drained, organic soils on floodplains adjacent to upland.

Dothan soils are well drained, sandy soils with loamy subsoil.

Faceville soils are well drained, sandy soils with a loamy or clayey subsoil.

Foxworth soils are well drained, sandy marine sediment derived, with acidic soils.

Fuquay soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Georgeville soils are gently sloping to sloping, well drained and moderately well drained soils.

Goldsboro soils are moderately well to poorly drained soils with loamy subsoil on nearly level ridges and in shallow depressions.

Hayesville soils are moderately shallow to deep, well drained soils in gently sloping to steep areas, with red to yellow-brown subsoil.

Helena soils are gently sloping to sloping, moderately well drained to well drained soils.

Herndon soils are gently sloping to sloping, well drained and moderately well drained soils.

Hiwassee soils are well drained, moderately sloping soils with clayey subsoil, moderately deep.

Hobcaw soils are nearly level, very poorly drained soils in depressions.

Johnston soils are nearly level, moderately well drained to very poorly drained soils, loamy throughout with a sandy surface layer on floodplains.

Kiawah soils are deep, somewhat poorly drained to poorly drained, acidic soils, sandy throughout, with a surface soil and subsoil of loamy fine sand.

Lakeland soils are well drained, sandy soils with a loamy subsoil and excessively drained soils.

Leon soils are somewhat poorly drained to poorly drained, level to nearly level, sandy soils with weakly cemented layers stained by organic matter.

Louisburg soils are well drained to excessively drained, shallow to deep soils, mainly red to yellowish-brown, friable to firm sandy clay loam to clay on narrow ridges and side slopes.

Lumbee soils are poorly drained and very poorly drained, sandy and loamy soils with a loamy subsoil.

Lynchburg soils are moderately well to poorly drained soils, with loamy subsoil, on nearly level ridges and in shallow depressions.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Marlboro soils are well drained soils with a sandy or loamy surface layer and a loamy or clayey subsoil.

Meggett soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Mouzon soils are poorly drained, loamy and sandy soils with a loamy subsoil.

Noboco soils are well drained, sandy soils with a loamy or clayey subsoil.

Norfolk soils are deep, well drained soils, with loamy subsoil, nearly level and gently sloping elevated uplands.

Ogeechee soils are poorly drained and moderately well drained, loamy soils with clayey or loamy subsoil, on terraces.

Orangeburg soils are well drained soils that have a sandy or loamy surface layer and a loamy or clayey subsoil.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Pelion soils are well drained and moderately well drained soils that have a sandy surface layer and a loamy subsoil, many with a fragipan in the subsoil.

Rains soils are moderately well to poorly drained soils, with a loamy subsoil, on nearly level ridges and in shallow depressions.

Tatum soils are dominantly sloping to steep, well drained to excessively drained soils, with a loamy subsoil, moderately deep or shallow to weathered rock.

Tawcaw soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Troup soils are well drained, sandy soils with loamy subsoil and excessively drained soils.

Varina soils are nearly level to sloping, well drained soils, with a sandy surface layer and a clayey or loamy subsoil.

Vaocluse soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Wadmalaw soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Wagram soils are well drained to very poorly drained, depressional to nearly level and gently sloping soils with a loamy to sandy surface layer and a clayey to loamy subsoil.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Yauhannah soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yonges soils are moderately well drained to poorly drained, nearly level soils with a sandy surface layer and a predominantly loamy subsoil.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot (USDA 1978), and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values in this assessment were derived from the former SCLRCC's Nonpoint Source Pollution Assessment (1988), where values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments which do erode. The range of K-factor values in the Saluda-Edisto Basin is from 0.10 to 0.43, among the 59 hydrologic units or watersheds.

Program Area Descriptions

Water Quality

Monitoring Overview

In an effort to evaluate the State's water quality, the Department operates a permanent Statewide network of primary ambient monitoring stations and flexible, rotating secondary and watershed monitoring stations (SCDHEC 1992). The ambient monitoring network is directed towards determining long-term water quality trends, identifying locations in need of additional monitoring efforts, and providing background data for planning and evaluating stream classifications and standards.

The monitoring data are also used in the process of formulating permit limits for wastewater discharges with the goal of maintaining State and Federal water quality standards and criteria in the receiving streams. These standards and criteria define the instream chemical concentrations which provide for protection and reproduction of aquatic flora and fauna, support the use classification of each waterbody, and serve as instream limits for the regulation of wastewater discharges or other activities. In addition, these data are used in the preparation of the biennial §305(b) report to Congress (SCDHEC 1994a), which summarizes State waters with respect to use classification attainment by comparing the ambient monitoring network data to the State Water Quality Standards. The ambient monitoring network, as a program, involves sampling a wide range of media and analyzing them for the presence or effects of contaminants.

The SCDHEC Water Quality Monitoring Network is comprised of three station types: primary, secondary, and watershed stations. Primary stations are sampled on a monthly basis year round, and are located in high water-use areas or as background stations upstream of high water-use areas. The static primary station network is operated statewide, and receives the most extensive parameter coverage, thus making it best suited for detecting long term trends.

Secondary stations are sampled monthly from May through October within the targeted basin, as well as selected areas outside the Basin. Secondary stations are located in areas where specific monitoring is warranted due to point source discharges, or areas with a history of water quality problems. Secondary station parameter coverage is less extensive and more flexible than primary or watershed station coverages. The number and locations of secondary stations have greater annual variability than do those in the primary station network, and may have additional sampling or parameter coverage during a basin's target year by mimicking primary or watershed stations.

Watershed stations are sampled on a monthly basis, year round, during a basin's target year; additional watershed stations may be sampled monthly from May through October to augment the secondary station network. Watershed stations are located to provide more complete and representative watershed coverage within the larger drainage basin for the identification of additional monitoring needs. The parameter coverage of watershed stations is more extensive and consistent than secondary stations, but not as extensive as primary stations. Ambient monitoring data from 55 primary stations, 59 secondary stations, 58 watershed stations, and 3 inactive stations were reviewed for the Saluda-Edisto Basin.

Monthly, quarterly or annual water column grab samples are used to establish representative physical conditions and chemical concentrations in the waterbodies sampled. This information is considered to represent "average" conditions related to the highly variable nature of flowing water situations. Water flows continuously and discrete inputs quickly proceed downstream. The immediate instream chemical concentrations resulting from nonpoint source inputs due to rain or from point source inputs of a variable nature are seldom measured. Routine sampling events rarely coincide with the time of the release; and the inputs may be undetectable by the monthly collection.

Many pollutants may be components of point source discharges, but may be discharged in a discontinuous manner, or at such low concentrations that water column sampling for them is impractical. Some pollutants are also common in nonpoint source runoff, reaching waterways only after a heavy rainfall; therefore, in these situations the best media for the detection of these chemicals are sediment and fish tissue, in which they may accumulate over time. Their impact may also affect the macroinvertebrate community.

Aquatic sediments represent a historical record of chronic conditions existing in the water column. Pollutants bind to particulate organic matter in the water column and settle to the bottom where they become part of the sediment "record". This process of sedimentation not only reflects the impact of point source discharges, but also incorporates nonpoint source pollution washed into the stream during rain events. As a result, contaminant concentrations originating from irregular and highly variable sources are recorded in the sediment. The sediment concentrations at a particular location do not vary as rapidly with time as do the water column concentrations. Thus, the sediment record may be read at a later time, unrelated to the actual release time.

Classified Waters, Standards, and Natural Conditions

The waters of the State have been classified in regulation based on the desired uses of each waterbody. State Standards for various parameters have been established to protect all uses within each classification. The water-use classifications (SCDHEC 1993a) are as follows.

Class ORW, or "outstanding resource waters", are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource, or those freshwaters suitable as a source for drinking water supply purposes, with treatment levels specified by the Department.

Class FW, or "freshwaters", are freshwaters which are suitable for primary and secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters are suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class is also suitable for industrial and agricultural uses.

Class Trout Waters is comprised of three types of water:

trout natural waters, which are freshwaters suitable for supporting reproducing trout populations and a cold water balanced indigenous aquatic community of fauna and flora,

trout put, grow and take waters, which are freshwaters suitable for supporting the growth of stocked trout populations and a balanced indigenous aquatic community of fauna and flora,

trout put and take waters, which are freshwaters protected by the standards of Class FW.

Class SFH, or "shellfish harvesting" waters, are tidal saltwaters protected for shellfish harvesting, and are suitable also for uses listed in Classes SA and SB.

Class SA comprises "tidal saltwaters" suitable for primary and secondary contact recreation, crabbing and fishing. These waters are not protected for harvesting of clams, mussels, or oysters for market purposes or human consumption. The waters are suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Class SB are "tidal saltwaters" suitable for the same uses listed in SA. The difference between the Class SA and SB saltwater concerns the DO limitations. Class SA waters must maintain daily DO averages not less than 5.0 mg/l, with a minimum of 4.0 mg/l, and Class SB waters maintain DO levels not less than 4.0 mg/l.

The Standards are used as instream water quality goals to maintain and improve water quality and also to serve as the foundation of the Water Pollution Control program. They are used to determine permit limits for treated wastewater dischargers and any other activities that may impact water quality. Using mathematical Wasteload Allocation Models, the impact of a wastewater discharge on a receiving stream, where flow is unregulated by dams, is predicted using 7Q10 streamflows. These predictions are then used to set limits for different pollutants on the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The NPDES permit limits are set so that, as long as a permittee (wastewater discharger) meets the established permit limits, the discharge should not cause a standards violation in the receiving stream. All discharges to the waters of the State are required to have an NPDES permit and must abide by those limits, under penalty of law.

Classifications are based on desired uses, not necessarily on natural or existing water quality. They are a legal means to obtain the necessary treatment of discharged wastewater to protect designated uses. Actual water quality may not have a bearing on a waterbody's classification. A waterbody may be reclassified if desired or existing public uses justify the reclassification and the water quality necessary to protect these uses is attainable. This is an amendment to a State regulation and as such must undergo public participation, SCDHEC Board approval, and S.C. Legislative approval.

Natural conditions may prevent a waterbody from meeting the water quality goals as set forth in the Standards. The fact a waterbody does not meet the Standards for a particular classification does not mean the waterbody is polluted or of poor quality. Certain types of waterbodies (ie. swamps, lakes, tidal creeks) may violate Standards as a result of natural conditions that have nothing to do with point or nonpoint source discharges. Under USEPA guidance, a waterbody can fail to meet Standards due to natural causes and still meet its use classification. Several such waterbodies have been given site specific Standards variances (SCDHEC 1993a). The classification or reclassification of a stream does not necessarily mean that the water quality in the stream will ever meet the applicable State Standards.

Water Quality Parameters

DISSOLVED OXYGEN

Oxygen is essential for the survival and propagation of aquatic organisms. If the amount of oxygen dissolved in water falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A fish kill is a severe example. Dissolved oxygen (DO) varies greatly due to natural phenomena, resulting in daily and seasonal cycles. Different forms of pollution also can cause declines in DO.

Changes in DO levels can result from temperature changes or the activity of microscopic plants (algae or phytoplankton) present in a waterbody. The natural diurnal (daily) cycle of DO concentration is well documented. Dissolved oxygen concentrations are generally lowest in the morning, climbing throughout the day and peaking near dusk, then steadily declining during the hours of darkness. Photosynthesis by phytoplankton releases oxygen during the day, which results in a rise in DO. In the dark, respiration consumes DO and lowers the concentration.

There is also a seasonal DO cycle in which concentrations are greater in the colder, winter months and lower in the warmer, summer months. Secondary stations are only sampled during summer months when water temperatures are elevated and DO concentrations are depressed, resulting in higher percentages of DO values below Standards, since there are no high winter values. Streamflow (in freshwater) is lower during the summer and greatly affects flushing, reaeration, and the extent of saltwater intrusion, all of which affect dissolved oxygen values.

When comparing the SCDHEC data to DO standards, it is necessary to consider several extenuating circumstances that contribute to apparent noncompliance. The SCDHEC sampling protocols are biased to approximate worst case conditions resulting from the combination of the tidal, diurnal, and seasonal cycles. Samples are collected as a single instantaneous grab sample, which is not truly representative of the daily average used as the criterion for most classifications.

Special studies are conducted in summer months to document worst case conditions. This results in many more samples than usual being collected during the crucial summer months, and a higher percentage of DO excursions. Secondary stations are sampled only during summer months and generally have a higher rate of DO excursions as a result. It is essential to examine the data to ascertain such patterns of excursions before summarily concluding that the indicated violations constitute poor water quality. The impact of biased sampling protocols must also be weighed as a factor in instances of nonsupport of classified uses.

BIOCHEMICAL OXYGEN DEMAND

Five-day biochemical oxygen demand (BOD_5) is a measure of the amount of dissolved oxygen consumed by the decomposition of carbonaceous and nitrogenous matter in water over a five-day period. The BOD_5 test indicates the amount of biologically oxidizable carbon and nitrogen that is present in wastewater or in natural water. Matter containing carbon or nitrogen uses dissolved oxygen from the water as it decomposes, which can result in a DO decline. The quantity of BOD_5 discharged by point sources is limited through the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The discharge of BOD_5 from a point source is restricted by the permits so as to maintain the applicable DO Standard.

pH

The hydrogen ion activity in a water sample is defined as the "pH", and is used as a measure of the acidity or alkalinity of the water. The pH scale ranges from 0 to 14 standard units (SU). A pH of 7 is considered neutral, with values less than 7 being acidic, and values greater than 7 being basic (or alkaline). pH may vary from the ranges specified in the standards due to a variety of natural causes. Low pH values are found in natural waters rich in dissolved organic matter, especially in Coastal Plain swamps and black water rivers. The tannic acid released from the decomposition of vegetation causes the tea coloration of the water and low pHs.

High pH values in lakes during warmer months may be due to high phytoplankton (algae) levels. Continuous flushing in streams prevents the development of significant phytoplankton populations. Most phytoplankton are dormant during the cold winter months, and populations begin to increase as the water warms in the spring. The relationship between phytoplankton and pH is well established. Daily cycles in pH are common in waters with significant phytoplankton populations. Photosynthesis by phytoplankton consumes carbon dioxide during the day releasing carbonate, which results in a rise in pH. In the dark, respiration releases carbon dioxide and lowers pH. Soft water lakes and ponds may reach a pH of 9-10 SU during periods of intense photosynthesis when large phytoplankton populations are present; hence, excursions of pH beyond Standards may be the result of natural conditions.

FECAL COLIFORM BACTERIA

Coliform bacteria are present in the digestive track and feces of all warm-blooded animals, including humans, poultry, livestock, and wild game species. Fecal coliform bacteria are themselves generally not harmful, but their presence in surface waters may be serious due to their association with sewage or animal waste. At present, it is difficult to distinguish between waters contaminated by animal waste and those contaminated by human waste.

Diseases that can be transmitted to humans through water contaminated by improperly treated human or animal waste are the primary concern. Fecal coliform bacteria are able to survive in water and are usually more numerous than waterborne disease producing organisms (pathogens). Therefore, it is best to test for fecal coliform bacteria as an indicator of possible fecal contamination rather than to try to isolate the relatively few pathogens which may be present in water.

Public health studies have established a correlation between fecal coliform numbers in recreational and drinking waters, and the risk of adverse health effects. Based on these relationships, the USEPA and SCDHEC have developed enforceable standards for surface waters to protect against adverse health effects from various recreational or drinking water uses. Proper waste disposal or sewage treatment prior to discharge to surface waters minimizes this type of pollution.

NUTRIENTS

'Nutrients', in terms of environmental water quality, usually refers to phosphorus and nitrogen, which are primary requirements for the growth and reproduction of aquatic plants. Oxygen demanding materials and nutrients are the most common constituents discharged to the environment by man's activities, through wastewater facilities and by agricultural, residential, and stormwater runoff. In general, increasing nutrient

concentrations are undesirable because of the potential for accelerated growth of aquatic vegetation and algal blooms which may, in turn, deplete dissolved oxygen and result in fish kills.

The forms of nitrogen routinely analyzed at SCDHEC stations are ammonia ($\text{NH}_3 + \text{NH}_4/\text{N}$), total Kjeldahl nitrogen (TKN), and nitrite-nitrate nitrogen (NO_2/NO_3). TKN assays the amount of organic nitrogen and ammonia in a sample. Nitrate is the product of aerobic decomposition of ammonia, and is a primary aquatic plant nutrient. Total phosphorus (TP) is measured to determine the phosphorus concentration of surface waters. This test includes all of the various forms of phosphorus (organic, inorganic, dissolved, and particulate) present in a sample.

There are no official standards or criteria for nutrients in water. However, the USEPA has issued recommendations for total phosphate phosphorus concentrations in order to limit eutrophication. High densities of phytoplankton can cause fluctuations of pH and DO beyond standards. Since these are only recommendations, and not a true criterion for use in evaluating water quality, it is difficult to determine the significance of elevated TP values. Because TP includes all forms of phosphorus, including that incorporated into algal biomass, it would be necessary to consider biological data to properly assess the implications of observed concentrations.

HEAVY METALS

The analysis used by the Department measures total metal concentration, which is a relatively conservative approach, since the total metal concentration is always greater than the acid-soluble or dissolved fraction. Most heavy metal criteria for freshwater are calculated from formulas using water hardness. The formulas used to calculate criteria values are constructed to apply to the entire United States, including Alaska and Hawaii. As with all the USEPA criteria, there is also a large margin of safety built into the calculations. The applicability of the hardness based criteria derived from the USEPA formulas to South Carolina waters has been a subject of much discussion. Hardness values vary greatly nationwide (from zero into the hundreds), with South Carolina representing the lower end of the hardness range (statewide average value is approximately 20 mg/l).

Representatives of the USEPA Region IV standards group have stated that no toxicity data for hardness values less than 50 mg/l were used in the development of the formulas. They have expressed reservations about the validity of the formulas when applied to hardness values below 50 mg/l. Based on this opinion, South Carolina's State Standards for metals are based on a hardness of 50 mg/l for waters where hardness is 50 mg/l or less, resulting in several criteria values below the Department's current analytical detection limits. Therefore, any detectable concentration of cadmium, copper, or lead is an excursion beyond recommended criteria.

The SCDHEC monitoring data has historically indicated that zinc and copper levels in South Carolina waters are elevated relative to USEPA criteria, apparently a statewide phenomenon in both fresh and salt waters, and possibly resulting from natural conditions. These levels do not appear to adversely affect state fisheries, which suggests that the levels are the result of long-term local conditions to which the fauna have adapted, as opposed to point source pollution events. It is difficult to assess the significance of heavy metal excursions due to the questionable applicability of the formulas at low hardness values and the occurrence of calculated criteria below present detection limits.

Methodology

At the majority of the SCDHEC's monitoring stations, samples for analysis are collected as single grab samples once per month, quarter, or year depending on the parameter. Samples collected at a depth of 0.3 meters are considered a surface measurement or a "grab sample". The USEPA does not define the sampling method or frequency other than indicating that it should be "representative". The grab sample method is considered to be representative for the purpose of indicating excursions relative to criteria, within certain considerations. A single grab sample is more representative of a one-hour average than a four-day average, more representative of a one-day average than a one-month average, and so on; thus, when inferences are drawn from grab samples relative to criteria, sampling frequency and the intent of the standards must be weighed. When the sampling method or frequency does not agree with the intent of the particular standard, any conclusion about water quality should be considered as only an indication of conditions, not as a proven circumstance.

Dissolved oxygen, temperature, and pH are measured monthly at each station in situ according to standard procedures (SCDHEC 1987) as dictated by their primary or secondary status. At many stations, these parameters are sampled as a water column profile, with measurements being made at a depth of 0.3 meters below the water surface and at one-meter intervals to the bottom. At other stations, these parameters were measured only at a depth of 0.3 meters. For the purpose of this assessment, only surface samples were used in the trend analyses and Standards comparisons. All water and sediment samples were collected and analyzed according to standard procedures (SCDHEC 1981, 1987).

Macroinvertebrate community structure is analyzed routinely at selected stations as a means of detecting adverse biological impacts on the aquatic fauna of the state's waters due to water quality conditions which may not be readily detectable in the water column chemistry.

Results from water quality samples can be compared to State Standards and USEPA criteria, with some restrictions due to time of collection and sampling frequency. For certain parameters, the monthly sampling frequency employed in the ambient monitoring network is insufficient for strict interpretation of the Standards. The time period used to assess Standards compliance was the last complete five years of data. This time period was chosen in light of subsequent basin assessments that will evaluate data collected within the five years since the last assessment. For the Standards comparisons (Appendices A, B, and C), columns headed with "EXC" are the number of values exceeding the criterion. Columns headed "N" are the total number of surface samples considered in the 1988-1992 time period. The "%" columns are the percentage of values exceeding the criterion. An excursion is a value outside of the appropriate range.

A dissolved oxygen criterion of 4 mg/l is used for Class SB, 6 mg/l for TPGT, and 5 mg/l for all other Classes. An excursion is an occurrence of a DO concentration less than the appropriate criterion. For fecal coliform bacteria, an excursion is an occurrence of a bacteria concentration greater than 400 per 100 ml for all Classes. As per the latest 305(b) guidance (USEPA 1993), comparisons to the bacteria geometric mean standard were not considered appropriate based on sampling frequency and the intent of the standard. For pH, there are several acceptable ranges applied depending on the Class of water: 6-8 SU for TPGT; 6-8.5 SU for FW; 5-8.5 SU for FW*; and 6.5-8.5 for SFH, SA, and SB.

In general, support of aquatic life uses is determined based on the percentage of DO and pH excursions, increases in water temperature due to heated effluents, and impacts to the macroinvertebrate

community. Support for recreational uses is based on the frequency of fecal coliform bacteria excursions and the occurrence of bathing area closures. Class SFH standards for the consumption of shellfish are more strict than the 400 per 100 ml figure used to evaluate recreational use support. The decision to close an area to harvesting is made by SCDHEC's Shellfish Sanitation Section, based on a different system of monitoring stations and sampling frequency than that of the ambient monitoring network (SCDHEC, 1992).

Fish/shellfish consumption use support is determined by the occurrence of advisories or bans on consumption for a waterbody.

Specifically, for DO, pH and fecal coliform bacteria, an excursion percentage ≤ 10 represents full support of uses. A percentage between 11-25 is considered partial support of uses, unless excursions are due to natural conditions. A percentage > 25 is considered to represent nonsupport of uses, unless excursions are due to natural conditions. For aquatic life uses, even if chemical conditions indicate full support, an impacted macroinvertebrate community reduces use support to nonsupport status. For the support of fish consumption uses, a fish consumption advisory or conditionally approved shellfish harvesting status indicates partial use support, a consumption ban or shellfish harvesting closure indicates nonsupport of uses. This is in keeping with the intent of the most recent USEPA 305(b) guidance (USEPA 1993).

Water column and sediment data were reviewed for occurrences of toxic organic compounds. Those detected are discussed in the watershed narrative evaluations. Heavy metals and organic compounds in water and sediment were not used in the determination of use support unless available biological data indicated an impact to biological integrity, or the frequency of occurrence and concentration was extreme. Excursions of heavy metals above criteria for the protection of aquatic life are summarized in the appendices. The occurrence of ubiquitous elements or compounds (such as zinc, copper, etc.) is not discussed unless the concentration is unusually high, or the frequency of detection is high and in combination with other rarely detected pollutants.

The USEPA criteria for heavy metals to protect aquatic life are specified as a four-day average and a one-hour average (USEPA 1986). These criteria have been adopted as State Standards (SCDHEC 1993a). Because of the quarterly sampling frequency for heavy metals, the USEPA advises against comparisons to chronic toxicity criteria (4-day average concentration); therefore, only the one-hour average for the protection of aquatic life was used in the water quality assessment (Table 1). State Standards for human health for several heavy metals were also used in the assessment.

Table 1. Metal Standards in Water (µg/l)				
Metal	Present Detection Level	Freshwater 1-Hour Ave.	Saltwater 1-Hour Ave.	Human Health
*Cadmium	10.0	1.79	43.0	5.000
Chromium (VI)	10.0	16.00	1100.0	50.000
*Copper	10.0	9.22	2.9	
*Lead	50.0	33.78	140.0	50.000
*Mercury	0.2	2.40	2.1	0.153
*Nickel	20.0	789.00	75.0	4584.000
*Zinc	10.0	65.00	95.0	
* Freshwater Standards based on a hardness of 50 mg/l as CaCO ₃ .				

Because zinc and copper are elevated statewide, concentrations are frequently measured in excess of the calculated acute aquatic life criteria. To identify areas where zinc and copper are elevated in the water column above normal background concentrations, concentrations greater than the detection limit from all SCDHEC monitoring sites statewide (collected between January, 1988 and December, 1992) were pooled and the 90th and 95th percentiles were computed. This was done separately for each metal, for freshwater and saltwater. The individual measurements from the Saluda-Edisto Basin were then compared to these percentiles. A metal concentration was considered to be high if it was in the top 10% of the pooled results, and very high if it was in the top 5%. This was also done for chromium, but because so few concentrations are above the detection limit, all samples collected were used to generate the percentiles. Occurrences of high or very high concentrations are mentioned in the watershed narrative evaluations. This same approach was used to identify sediments with elevated metals concentrations, since there are no standards for sediment. Percentiles were constructed using statewide sediment data as discussed above. Only values greater than the detection limit were used for chromium, copper, nickel, lead, and zinc. Because so few concentrations of cadmium and mercury are measured above the detection limit, all samples were pooled for these metals. A sediment metal concentration was considered to be high if it was in the top 10% of the pooled results, and very high if it was in the top 5%. Occurrences of high or very high sediment concentrations are indicated in the watershed narrative evaluations.

For metals, columns headed "EXC" contain the number of values in excess of the aquatic life criterion. The column headed "N" is the total number of samples for the particular metal analyzed between 1988 and 1992. For metals with human health criteria, the median of the samples collected during the five year period is listed in the column headed "MED". A potential human health threat is indicated if the median exceeds the human health criterion. Blank cells for metals indicate no metals samples collected at those stations during the period of review.

Surface data from each station were analyzed for statistically significant long-term trends (Appendices A, B, and C) using a modification of Kendall's tau (Bauer *et al.* 1984, Hirsch *et al.* 1982, Smith *et al.* 1982, Smith *et al.* 1987). The modified Kendall test is a nonparametric test which also removes seasonal effects. The basic methodology utilized was that of Smith *et al.* (1982). Flows were not available for most stations, and the parametric concentrations were not flow-corrected. Seasonal Kendall's tau analysis was used to test for the presence of a statistically significant trend of a parameter, either increasing or decreasing, from January, 1980 through December, 1992. It indicates whether the concentration of a given parameter is exhibiting consistent change in one direction over the specified time period.

A rigorous evaluation for trends in time-series data usually includes a test for autocorrelation. The data were not tested for autocorrelation prior to the trend analysis. It was felt that autocorrelation would not seriously compromise a general characterization of water quality trends based on a thirteen-year series of deseasonalized monthly samples.

One of the advantages of the seasonal Kendall test is that values reported as being below detection limits (DL) are valid data points in this nonparametric procedure, since they are all considered to be tied at the DL value. When the DL changed during the period of interest, all values were considered to be tied at the highest DL occurring during that period as suggested by Hirsch *et al.* (1982). Since fecal coliform bacteria detection limits vary with sample dilution, there is no set DL; therefore, for values reported as less than some number, the value of the number was used. Since it is possible to measure concentrations equal to the value of the DL, values reported as less than DL were reduced by subtraction of a constant so that they would remain tied with each other, but be less than the values equal to the DL.

Columns headed with "N" represent the number of samples utilized in the trend analyses. In the other trend related columns: "D" indicates a statistically significant declining trend (two-sided, $p \leq 0.1$); "I" indicates a statistically significant increasing trend (two-sided, $p \leq 0.1$); "*" indicates no statistically significant trend at $p = 0.1$; and blanks indicate that there were insufficient data to perform a trend analysis. Trend analyses for each station are discussed in the watershed narrative evaluations.

Lake Water Quality Assessments

The Clean Lakes Program was established under §314(a) of the Clean Water Act of 1972, with the purpose of implementing methods and procedures to control sources of pollution affecting water quality in publicly-owned freshwater lakes and to restore deteriorated lakes. Specifically, Lake Water Quality Assessments, conducted under §314, identify and classify the trophic condition of publicly-owned and accessible freshwater lakes, establish procedures and methods to control lake pollution sources and to restore water quality, list and describe impaired lakes, and assess the status and trends of lake trophic condition. A trend is indicated by consistently decreasing or increasing index values over the three most recent sampling periods. Through the Clean Lakes Program, the USEPA provides technical and financial assistance to the State to assess, protect and restore lake water quality. The following classification system was used to determine degree of eutrophication within the State's lakes and to direct focus appropriately, whether for preservation, protection or restoration (SCDHEC 1991b).

Water Quality Category I describes lakes with the highest trophic condition, and is indicated by excessive nutrients, high productivity, and the susceptibility to nuisance macrophyte growth, algal blooms, and/or high turbidity; further study is recommended.

Water Quality Category II describes lakes with an intermediate trophic status, and a possible susceptibility to degradation; protection is recommended.

Water Quality Category III describes lakes with the lowest trophic status; preservation is recommended.

Lakes selected for implementation are addressed in three phases with each phase dependent on available funding:

Phase I - Diagnostic/Feasibility Study

Phase II - Implementation

Phase III - Post Implementation Monitoring

Sanitary Bathing Areas

Many recreational water areas are permitted by the Department to insure public health requirements. The regional councils of government are cooperating with the Department by identifying additional swimming or bathing areas (regularly used beaches and river banks with public access) where water quality monitoring may be needed. Currently permitted areas are located and discussed in the appropriate watershed evaluations.

Water Supply

Surface water intakes for drinking water and industrial purposes are permitted by the Department. Reporting requirements for industrial surface water intakes are also met by the Department (formerly performed by S.C. Water Resources Commission). Intake location and the volume removed from a stream are included for appropriate watersheds for both drinking water and industrial usages.

Wetlands

In the Section 401 water quality certification process, applications for wetland development may be denied or modified due to the special nature of a wetland or mitigated in part or entirely and new wetlands created. Future development would be prohibited in these newly created or legally protected areas. Knowledge of areas that are restricted from development due to mitigation or special water classification is useful in planning future development in a watershed. The list of outstanding resource waters (ORW) has been refined to include wetlands that qualify for, and should be afforded, the highest level of protection. In addition, wetlands that are not currently classified as ORW, but meet certain criteria (ie. absence of dischargers, endangered species, federal lands) will be noted as potential ORW candidates. In cooperation with the S.C. Department of Natural Resources's Division of Land Resources and Conservation Districts, Landsat Thematic Mapper (TM) satellite image data will provide an inventory of wetlands in the basin and an image-based geographical information system (GIS) for subsequent monitoring and tracking efforts.

Point Source Contributions

Wasteload Allocation Process

A wasteload allocation (WLA) is the portion of a stream's assimilative capacity for a particular pollutant which is assigned to an existing or proposed point source discharge. Existing WLAs are updated as a result of the normal permit expiration and reissuance process or as part of the basin review process. New WLAs are developed for proposed projects seeking a discharge permit or for existing discharges proposing to increase their effluent loading. Wasteload allocations for oxygen demanding parameters are developed by the WLA Section. Wasteload allocations for toxic pollutants and metals are developed by the appropriate permitting division.

The ability of a stream to assimilate a particular pollutant is directly related to its physical and chemical characteristics. Various techniques are used to estimate this capacity. Simple mass balance/dilution calculations may be used for a particular conservative (non-decaying) pollutant while complex models may be used to determine the fate of non-conservative pollutants that degrade in the environment. Waste characteristics, available dilution and the number of discharges in an area may, along with existing water quality, dictate the use of a simple or complex method of analysis. Projects which generally do not require complex modeling include: ground water remediation, non-contact cooling water, mine dewatering, air washers, and filter backwash.

Streams are designated either effluent limited or water quality limited based on the level of treatment required of the dischargers to that particular portion of the stream. In cases where USEPA published effluent guidelines (the minimum treatment levels required by law) are sufficient to maintain instream water quality standards, the stream is said to be effluent limited. Streams lacking the assimilative capacity to allow a discharge at minimum treatment levels are said to be water quality limited. In this case better than technology limits are required, thus water quality, not minimum requirements, controls the permit limits. The Wasteload Allocation Section recommends limits for numerous parameters including ammonia nitrogen (NH₃-N), dissolved oxygen (DO), total residual chlorine (TRC), and five-day biochemical oxygen demand (BOD₅). Limits for other parameters, including metals, toxics, and nutrients are developed by the Municipal Wastewater Division or Industrial and Agricultural Wastewater Division in conjunction with support groups within the Department.

TMDL Definition

A total maximum daily load (TMDL) is the calculated maximum allowable pollutant loading to a waterbody at which water quality standards are maintained. A TMDL is made up of two main components, a load allocation and a wasteload allocation. A load allocation is the portion of the receiving water's loading capacity attributed to existing or future nonpoint sources or to natural background sources. The waste load allocation is the portion of a receiving water's loading capacity allocated to an existing or future point source. A TMDL may also include an unallocated portion of the capacity reserved as a margin of safety or for future development.

TMDLs form links between water quality standards and point and nonpoint source controls. In water quality impaired areas, the TMDL process provides a mechanism to integrate management of point and nonpoint source pollution. Section 303(d) of the Clean Water Act requires states to identify waters that are

water quality impaired, whether as a result of nonattainment of point or nonpoint source related water quality standards, or if controls more stringent than minimums set in effluent guidelines are deemed necessary. Where applicable, TMDLs are to be developed by the states in order to achieve nonattained water quality uses, and results are submitted to USEPA for approval. The §303(d) list of waterbodies that may require TMDL development (SCDHEC 1994b) is included in the appropriate watershed descriptions. Waterbodies included on the §303(d) high priority list are targeted for TMDL development.

Section 304(l) of the Act requires states to identify all point sources discharging any toxic pollutant that is believed to be impairing stream water quality and to indicate the amount of the toxic pollutant discharged by each source. The §304(l) short list of point source concerns for toxic effluent is documented in an earlier §305(b) Report (SCDHEC 1990), and is also included in the appropriate watershed descriptions.

Permitting Strategy

The Domestic Wastewater Division and the Industrial and Agricultural Wastewater Division are responsible for drafting and issuing NPDES permits. All NPDES permits in the Saluda-Edisto Basin are to be drafted and issued, or revoked and reissued by September 30, 1994, and will all be reissued together in 1999. Saluda-Edisto Basin permits that remain unissued after September 30, 1994 will be issued during the first quarter of Fiscal Year 95. These permits will also be reissued in 1999 to coincide with the basin permitting year. Major and minor NPDES reissued permits will be individually public noticed in a newspaper of general circulation and the site will be posted. New NPDES permits and modifications of existing NPDES permits will be issued as the need arises. New permits and modifications of existing permits will be public noticed by newspaper advertisement and site posting. The permitting Divisions for the Saluda-Edisto Basin will coordinate drafting of permits for reissue by watershed management units during the 1999 basin permitting year. Watershed-based joint public notices also will be held in 1999.

The permitting Divisions use general permits with statewide coverage for certain categories of minor industrial NPDES permits. Discharges covered under general permits include utility water, potable surface water treatment plants, potable ground water treatment plants with iron removal, petroleum contaminated groundwater, and mine dewatering activities. Additional activities proposed for general permits include bulk oil terminals, aquacultural facilities, and ready-mix concrete/concrete products. Land application systems for land disposal and lagoons are also permitted, and the municipal, community (private), and industrial land application systems will be included in this document as well as NPDES point source dischargers.

A completed draft permit is sent to the permittee, the SCDHEC District office, and if it is a major permit, to the USEPA to be certified. When the permit draft is finalized, it is put on public notice. Comments from the public are considered and, if requested, a public hearing may be arranged. Both oral and written comments are collected at the hearing, and after considering all information, the Department staff makes the decision whether to issue the permit as drafted, issue a modified permit, or to deny the permit. Everyone who participated in the process receives a copy of the final staff decision. Minor permits will be grouped by watershed and publicly reviewed together; major permits will individually stand public review. Staff decisions may be appealed according to procedure in Regulation 61-72.

Nonpoint Source Contributions

Nonpoint source (NPS) pollutants are generally introduced to a waterbody during a storm event and enter the system from diverse areas, unlike point source pollutants which enter from discrete sources, such as a pipe. Nonpoint source contributions originate from a variety of activities that include agriculture, silviculture, construction, urban stormwater runoff, hydrologic modification, landfills, mining, and residual wastes. A computer model was developed by the former SCLRCC (1988) which incorporated general land cover data, stream length information, and general soil associations, by watershed, into the SEDCAD+ software package to determine relative levels of NPS pollution in terms of waterway sedimentation. The SEDCAD+-based computer model results are described in the individual watershed evaluations.

Section 319 of the 1987 amendment of the Clean Water Act requires states to assess the nonpoint source water pollution associated with surface and ground water within their borders and implement a management strategy to control and abate the pollution. The Assessment of Nonpoint Source Pollution in South Carolina (SCDHEC 1989) fulfills the §319 requirement. The NPS Management Program targets waterbodies for priority implementation of management projects. Comprehensive projects are currently being implemented in a number of these watersheds. Components of the projects vary, but all include BMP demonstrations, education, and monitoring. The 1989 NPS Assessment was supplemented with current water quality data in order to confirm or update the earlier information.

Section 62-17 of the 1990 Coastal Zone Act Reauthorization Amendment (CZARA) requires states with federally approved Coastal Zone Management Programs to develop Coastal Nonpoint Source Pollution Control Programs. At the federal level, the program is administered and funded jointly by the National Oceanic and Atmospheric Administration (NOAA) and EPA. In South Carolina, the Department's Office of Ocean and Coastal Resource Management (formerly S.C. Coastal Council) and the Bureau of Water Pollution Control are responsible for development and implementation of the program. The Department must submit an approvable Coastal Nonpoint Source Pollution Control Program by July 1995.

The purpose of the Coastal Nonpoint Source Pollution Program is to insure the protection and restoration of coastal waters through the implementation of management measures defined in §62-17 as "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution". The management measures address six major categories: agriculture, forestry, urban areas, marinas/recreational boating, hydromodification, and wetlands. These management measures must be implemented within a geographic area sufficient to restore and protect coastal waters. The Department plans to implement the program within the existing coastal zone, which is comprised of the State's eight coastal counties.

Mining Activities

Mining activities within the State are permitted by the Mining and Reclamation Division of the Department's Bureau of Solid and Hazardous Waste (formerly of the SCLRCC). Soil excavation activities and locations are listed for the appropriate watersheds.

Landfill Activities

All Landfill activities are permitted and regulated by the Department. All active and closed industrial and municipal solid waste landfills, as well as hazardous waste landfills are identified and located for the appropriate watersheds.

Ground Water Concerns

Ground water is an important resource for drinking water use, together with agricultural, industrial and commercial usages. Based on USEPA Drinking Water Standards, the overall quality of South Carolina's ground water is excellent. Contaminated ground water is expensive and difficult to restore; therefore, ground water protection for present and future usage is the management emphasis. Localized sources of ground water contamination can include: septic tanks, landfills (municipal and industrial), surface impoundments, oil and gas brine pits, underground storage tanks, above ground storage tanks, injection wells, hazardous waste sites (abandoned and regulated), salt water intrusion, land application or treatment, agricultural activities, road salting, spills and leaks. For the purposes of this assessment, only ground water contamination affecting surface waters will be identified. A more detailed accounting of ground water contamination will be addressed in the Saluda-Edisto Basin update in 1998. The ground water contamination inventory (SCDHEC 1993b) was used to identify ground water-related problem areas in the basin. Sites in the inventory are referenced by name and county, and is updated annually.

Storm Water Contributions

Storm water arises from precipitation during rain events, which washes runoff from industrial, agricultural, construction, and household sites directly into streams or into drainage systems that eventually drain into streams. The EPA National Storm Water Permit Program focuses on municipal and industrial pollution prevention to assist in controlling storm water pollution. The Department has general permit authority for industrial dischargers and regulated construction site dischargers. General permits require development of pollution prevention plans to identify BMPs that will control storm water discharge pollutants. If the BMPs are ineffective in protecting water quality, an individual permit is required to resolve the problem.

The Department is responsible for issuing NPDES storm water permits to prevent degradation of water quality. The Department also issues permits for sediment and erosion control for construction sites (formerly issued by SCLRCC). To date, the Department has received 385 individual permits statewide and 2100 notices of intent (NOI) to receive a general permit (1,244 industrial and 855 construction).

Permits for municipal systems allow communities to design storm water management programs that are suited for controlling pollutants in their jurisdiction. There are two population-based categories of municipal separate storm sewers: large municipal (population greater than 250,000) and medium municipal (population between 100,000 and 250,000). In this basin, Greenville and Richland Counties and the City of Columbia must obtain a comprehensive municipal permit that addresses storm water within their jurisdiction. All municipalities in this basin are defined as medium municipalities.

Shellfish Harvesting Waters

The Shellfish Sanitation Program of the SCDHEC ensures that shellfish and the shellfish harvesting areas meet health and environmental quality standards. These standards are defined by State Regulation 61-47 (SCDHEC 1993a), and by operational manuals developed by the Interstate Shellfish Sanitation Conference (ISSC) and adopted by the USFDA. Shellfish harvesting season extends from September 15 to May 15 with up to a 15 day variance at the start or conclusion of the season. Sanitary surveys, conducted by the Department, assess the coastal waters and determine shellfish harvesting classifications based on actual water quality as follows:

Approved harvesting status is assigned to waters that are not contaminated with fecal material, pathogenic microorganisms, nor poisonous and deleterious substances in concentrations dangerous to human health. The fecal coliform MPN median does not exceed 14/100 ml in the water, and 10% of the samples do not exceed 43/100 ml.

Conditionally Approved harvesting status is assigned to waters that are subject to temporary conditions of actual or potential pollution. Temporary decline in water quality may be caused by activities such as malfunctioning wastewater treatment plants or nonpoint source pollution after rainfall events. Fecal coliform standards in such waters are the same as for the approved classification.

Restricted harvesting status is assigned to waters where a limited degree of pollution renders the shellfish unsafe for direct marketing, but may be marketed after relaying or depuration. The median fecal coliform levels in restricted waters are between 14 and 88/100 ml, with not more than 10% of the samples exceeding 260/100 ml.

Prohibited harvesting status is assigned to waters with excessive concentrations of pollutants, or where the potential exists for excessive concentrations. This classification is ascribed to waters where the median fecal coliform MPN exceeds 88/100 ml, or more than 10% of the samples exceed 260/100 ml. Shellfish may not be harvested from prohibited areas for human consumption; however, prohibited status does not necessarily indicate lesser water quality, but may indicate a potential for variable water quality due to pollutant sources.

Location and extent of the State's shellfish beds are currently being digitized (S.C. Dept. of Natural Resources) and will be available in the near future. Computer generated maps of shellfish bed locations will be produced and be included in the 1998 update of the Saluda-Edisto Basin assessment. A digital computer layer will also be produced of shellfish areas for GIS (geographic information system) analyses.

Growth Potential and Planning

Land use and management, can define the impacts to water quality in relation to point and nonpoint sources. Assessing the potential for an area to expand and grow allows for water quality planning to occur and, if appropriate, increased monitoring for potential impairment of water quality. Indicators used to predict growth potential include water and sewer service, road and highway accessibility, and population trends. These indicators and others are used as tools to determine areas within the Saluda-Edisto Basin having the greatest potential for impacts to water quality as a result of development.

The regional Councils of Governments (COGs), located within the three watershed management units (WMU) of the Saluda-Edisto Basin include: the Appalachian Council of Governments in WMU-0201, the Upper Savannah Council of Governments in WMU-0201, WMU-0202, and WMU-0203, the Central Midlands Regional Planning Council in WMU-0201, WMU-0202, and WMU-0203, Lower Savannah Council of Governments in WMU-0202 and WMU-0203, the Lowcountry Council of Governments in WMU-0203, and the Berkeley-Charleston-Dorchester Council of Governments in WMU-0203. The Councils of Governments were requested to identify areas of high growth potential that could adversely impact future water quality (Appalachian Council of Governments 1993; Central Midlands Regional Planning Council 1993; Lowcountry Council of Governments 1992; Lower Savannah Council of Governments 1992, 1993; Upper Savannah Council of Governments 1992, 1993). The COGs also provided locational information on the landfills and recreational waters in their regions.

Many counties in the Saluda-Edisto Basin lack county wide zoning ordinances; therefore, there is little local regulatory power to influence the direction or magnitude of regional growth. The majority of municipalities have zoning ordinances in place; however, much of the growth takes place just outside the municipal boundaries, where infrastructure is inadequate. The §208 Areawide Water Quality Management Plans were completed in great detail during the 1970's and are in current need of updating. Revision and addition to the COG's Areawide §208 Plans would greatly expand the planning tools needed to predict growth areas and appropriately plan for them.

Watershed boundaries extend along topographic ridges and drain surrounding surface waters. Roads are commonly built along ridge tops, with the best drainage conditions. Cities often develop in proximity to ridges as a result of their plateau terrain. It is not uncommon, then, to find cities or road corridors located along watershed boundaries, and thus influencing or impacting several watersheds.

Implementation Strategy

The implementation strategy details both impaired and unimpaired streams with noteworthy long-term trends. Streams are considered impaired if they are unable to meet classified uses for aquatic life, recreation or fish consumption based on the corresponding standards (see Methodology Section for interpretation). The actions indicated should occur prior to the updating assessment in 1998. (*=see text for additional information)

IMPAIRED STREAMS

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03050109-010 North Saluda River* (3 Sites)	Recreation	NS-Fecal Coliform (Downstream Site)	Point Source	Revise Permit Limits
03050109-020 South Saluda River (5 Sites)	Recreation	PS, NS-Fecal Coliform (2 Downstream sites)	Point Source	Revise Permit Limits
Middle Saluda River (4 Sites)	Recreation	PS-Fecal Coliform (Downstream site)	Nonpoint Source- Several Camps in area	Further Evaluation
03050109-040 Saluda River* (3 Sites)	Recreation	PS-Fecal Coliform (Upstream & Downstream Sites)	Point Source	Revise Permit Limits
Mill Creek and Unnamed Tributary	Aquatic Life	NS-Dissolved Oxygen, Chromium & Zinc	Ground Water Contamination	Remediation Underway
	Recreation	NS-Fecal Coliform & Chromium	Nonpoint Source	Further Evaluation
	---	Ground water contaminated with Chromium	Nonpoint Source	Remediation Underway
	Fish Consumption	NS-Chromium	Ground Water Contamination	Remediation Underway
Unnamed Saluda River Tributary*	Aquatic Life	PS-pH	Point Source	Revise Permit Limits
	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits Facility Under Enforcement
Grove Creek	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits Facility Under Enforcement
03050109-050 Georges Creek (2 Sites)	Recreation	NS-Fecal Coliform (Both Sites)	Point & Nonpoint Sources	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
East Creek & Middle Creek (Hamilton Creek Tributaries)	---	Ground Water Contaminated with Volatile Organics & Metals (Chromium, Copper, Zinc)	Nonpoint Source	Remediation Underway
Georges Creek Tributary*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050109-060 Big Brushy Creek (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
03050109-080 Saluda River*	Aquatic Life	NS-Pesticide	Nonpoint Source	Further Evaluation
Unnamed Trib to Lake Greenwood	---	Ground Water Contaminated with Volatile Organics	Nonpoint Source	Facility in Assessment & Remediation Phase
03050109-090 Broad Mouth Creek* (4 Sites)	Aquatic Life	NS-Dissolved Oxygen (Upstream Site)	Point Source	Plants Being Eliminated (Tying Into Ware Shoals Plant)
	Recreation	PS,NS-Fecal Coliform (2 Upstream Sites)		
Unnamed Tributary of Broad Mouth Creek	Aquatic Life	NS-Impacted Macroinvertebrate Community	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03050109-100 Reedy River* (5 Sites)	Aquatic Life	PS-Dissolved Oxygen (Downstream Site)	Point Source	Revise Permit Limits
		NS-Chromium & Zinc (2 Midstream Sites)	Nonpoint Source	Further Evaluation
	----	Ground Water Contaminated with Volatile Organics & Metals (Chromium & Zinc)	Nonpoint Source	Remedial Investigation Pending
	Recreation	PS-(Upstream Site), NS-(4 Downstream Sites) Fecal Coliform	Point Source	Revise Permit Limits
Langston Creek*	Aquatic Life	NS-Chromium	Nonpoint Source	Ground Water Remediation underway
	---	Ground Water Contaminated with Chromium	Nonpoint Source	Ground Water Remediation underway
	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
Richland Creek Tributary	---	Ground Water Contaminated with Volatile Organics	Nonpoint Source	Facility in Assessment Phase
Brushy Creek	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
Laurel Creek	---	Ground Water Contaminated with Volatile & Semi-Volatile Organics	Nonpoint Source	One Facility is in Remedial Design Phase and the other is in Remediation
Rocky Creek	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050109-110 Huff Creek (2 Sites)	Recreation	PS-Fecal Coliform (Downstream Site)	Nonpoint Source	Continue Monitoring
Huff Creek Tributary	---	Ground Water Contaminated with Volatile Organics	Point Source	Assessment Phase
03050109-120 Reedy River* (2 Sites)	Aquatic Life	NS-Impacted Macroinvertebrate Community (Upstream Site)	Point Source	Special Study Recommended
03050109-130 Rabon Creek*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03050109-140 Ninety Six Creek*	Recreation	PS-Fecal Coliform	Point Source	Revise Permit Limits
Coronaca Creek*	Aquatic Life	NS-Dissolved Oxygen	Point Source	Revise Permit Limits
Wilson Creek* (2 Sites)	Aquatic Life	PS-Dissolved Oxygen (Upstream Site)	Point Source	Revise Permit Limits
	Recreation	PS-Fecal Coliform (Both Sites)	Point Source	Revise Permit Limits
03050109-160 Little River* (3 Sites)	Recreation	NS-Fecal Coliform (All Sites)	Point Source	Revise Permit Limits
Reedy Fork Tributary	---	Ground Water Contaminated with Volatile Organics	Nonpoint Source	Assessment Phase
North Creek*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050109-163 Little River* (2 Sites)	Recreation	NS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
03050109-150 Saluda River* (3 Sites)	Aquatic Life	PS-Dissolved Oxygen (Up- & Midstream Sites)	Lake Greenwood Discharge	Continue Monitoring
Bush River* (3 Sites)	Recreation	NS-Fecal Coliform (All Sites)	Point Source	Revise Permit Limits
Scott Creek*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050109-170 Little Saluda River* (2 Sites)	Aquatic Life	NS-(Upstream Site), PS-(Downstream Site) Dissolved Oxygen	Point Source	Revise Permit Limits
	Recreation	NS-Fecal Coliform (All Sites)	Point Source	Revise Permit Limits
03050109-180 Clouds Creek* (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
03050109-190 Camping Creek*	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03050109-200 Hollow Creek	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050109-210 Saluda River* (3 Sites)	Aquatic Life	NS-Dissolved Oxygen (Up- & Midstream Sites)	Lake Murray Discharge	Continue Monitoring
	Recreation	PS-Fecal Coliform	Point Source	Continue Monitoring
Rawls Creek	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
Lorick Branch*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
Twelvemile Creek*	Recreation	PS-Fecal Coliform	Point Source	Further Evaluation
Kinley Creek*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050110-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Congaree River* (4 Sites)	Aquatic Life	PS-Fecal Coliform (Broad River bank Site)	Nonpoint Source	Further Evaluation
	---	Ground Water Contaminated with Nitrates & Volatile Organics	Nonpoint Source	Monitoring & Assessment Phase
Mill Creek* (2 Sites)	Aquatic Life	PS-Dissolved Oxygen (Downstream site)	Nonpoint Source	Further Evaluation
	Recreation	NS-(Upstream Site), PS-(Downstream Site) Fecal Coliform	Nonpoint Source	Further Evaluation
Mill Creek Tributary	---	Ground Water Contaminated with Nitrates & Volatile Organics	Nonpoint Source	Monitoring & Assessment Phase
03050110-020 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Congaree Creek* (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Point Source	Revise Permit Limits
Savana Branch*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
Lake Caroline*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
Sixmile Creek*	Aquatic Life	PS-Dissolved Oxygen	Nonpoint Source	Further Evaluation
03050110-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Gills Creek* (2 Sites)	Recreation	NS-Fecal Coliform (Both Sites)	Nonpoint Source	NPS Watershed Project Underway
	---	Ground Water Contaminated with Volatile Organics	Nonpoint Source	Monitoring & Assessment Phases
Jackson Creek Tributary	---	Ground Water Contaminated with Volatile Organics	Nonpoint Source	Monitoring & Assessment Phase; Corrective Action is Planned for both Ground & Surface Waters
03050110-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050110-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Cedar Creek (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
03050110-060 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050110-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Congaree River*	Aquatic Life	NS-Zinc & Copper	Nonpoint Source	Further Evaluation
03050203-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Chinquapin Creek*	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits
Lightwood Knot Creek	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050203-020 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050203-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050203-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050203-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
Bull Swamp Creek* (3 Sites)	Aquatic Life	NS-Dissolved Oxygen (Upstream Site)	Point Source	Revise Permit Limits
	Recreation	PS-Fecal Coliform (Upstream Site)	Point Source	Revise Permit Limits
03050203-060 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050203-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Caw Caw Swamp	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050203-080 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
South Fork Edisto River*	Recreation	PS-Fecal Coliform (Upstream Site)	Point Source	Revise Permit Limits
First Branch*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050204-020 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-060 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050204-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Roberts Swamp	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050206-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Four Hole Swamp*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
Gramling Creek*	Aquatic Life	NS-Dissolved Oxygen	Nonpoint Source	Further Evaluation
	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
Little Bull Creek*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03050206-020 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050206-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Cow Castle Creek	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits
03050206-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050206-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Providence Swamp*	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050206-055 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Horse Range Swamp	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050206-060 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Dean Swamp	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050206-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050205-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
03050205-020 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Cattle Creek	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050205-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Edisto River* (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
03050205-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Polk Swamp* (2 Sites)	Recreation	NS-Fecal Coliform (Both Sites)	Point & Nonpoint Sources	Revise Permit Limits
03050205-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Edisto River	Recreation	PS-Fecal Coliform	Nonpoint Source	Further Evaluation
03050205-060 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Further Evaluation
Edisto River* (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
Fishing Creek	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
03050205-070 Toogoodoo Creek	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Toogoodoo Creek Tributary	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Lower Toogoodoo Creek	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Tom Point Creek	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Russel Creek (Headwaters to Steamboat Creek)	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Church Creek* (Marker 77 in Wadmalaw Sound to Raven Point Creek)	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation
Bohicket Creek* (2 Sites)	Aquatic Life	NS-(Upstream Site); PS-(Downstream Site) Dissolved Oxygen	Unknown	Further Evaluation
	Shellfish Harvesting	PS-Fecal Coliform	Nonpoint Source (Septic Tanks)	Further Evaluation

UNIMPAIRED WATERS WITH NOTABLE TRENDS

The waters listed in this table are not impaired, but rather display long-term trends that bear following, primarily with continued monitoring. (DO=Dissolved Oxygen, BOD5=Five day Biological Oxygen Demand; FC=Fecal Coliform; TB=Turbidity; TP=Total Phosphorus; Zn=Zinc; Cu=Copper)

WATERSHED WATERBODY	CONCERN	POTENTIAL SOURCE	PLANNED ACTION
03050109-010 Poinsett Reservoir	Increasing Trend in pH	Unknown	Continue Evaluation
03050109-020 Table Rock Reservoir	Elevated Zn	Unknown	Continue Evaluation
03050109-080 Cane Creek (2 Sites)	Declining Trend in DO (Downstream Site); Sedimentation affecting Macroinvertebrate Community	Nonpoint Source	Continue Evaluation
Lake Greenwood (4 Sites)	Declining Trend in DO (Reedy River Arm); Declining Trend in pH (Main Body of Lake)	Nonpoint Source	Continue Evaluation
03050109-190 Lake Murray (8 Sites)	Increasing Trend in BOD5 (Rocky Creek Arm); Increasing Trend in pH (All Sites); Increasing Trend in FC (5 of 8 Sites); Elevated Zn (4 of 8 Sites)	Nonpoint Source	Continue Evaluation
03050110-020 Red Bank Creek (2 Sites)	Increasing Trends in TB & pH (Upstream Site); Increasing Trends in TB (Downstream Site)	Nonpoint Source	Continue Evaluation
03050110-030 Windsor Lake	Increasing Trends in TB	Nonpoint Source	Continue Evaluation
Forest Lake	Increasing Trends in TB & FC, Elevated Zn	Nonpoint Source	Continue Evaluation
03050203-020 North Fork Edisto River	Elevated Zn	Unknown	Continue Evaluation
03050203-040 North Fork Edisto River (2 Sites)	Increasing Trends in TB & pH (Upstream Site); Elevated Zn (Downstream Site)	Nonpoint Source	Continue Evaluation
03050203-060 North Fork Edisto River	Increasing Trends in TB & pH	Nonpoint Source	Continue Evaluation

WATERSHED WATERBODY	CONCERN	POTENTIAL SOURCE	PLANNED ACTION
03050203-080 North Fork Edisto River	Increasing Trends in TB (5 of 6 Sites) & pH (1 of 6 Sites)	Nonpoint Source	Continue Evaluation
03050204-020 Shaw Creek (3 Sites)	Macroinvertebrate Habitat Degradation (Upstream Site); Elevated Zn (Midstream Site)	Nonpoint Source	Continue Evaluation
03050204-050 South Fork Edisto River	Increasing Trends in TB, TP, & FC; Declining Trend in DO	Nonpoint Source	Continue Evaluation
03050204-060 Goodland Creek	Increasing Trend in TB	Nonpoint Source	Continue Evaluation
03050206-070 Four Hole Swamp (2 Sites)	Increasing Trend in FC (Upstream Site)	Nonpoint Source	Continue Evaluation
03050205-010 Edisto River (2 Sites)	Increasing Trends in TB & FC, Elevated Zn (Upstream Site)	Nonpoint Source	Continue Evaluation
03050205-070 Dawho River	Declining Trends in DO & pH; Increasing Trend in TB; Elevated Zn	Nonpoint Source	Continue Evaluation
North Edisto River	Declining Trend in pH; Increasing Trend in TB	Nonpoint Source	Continue Evaluation

Description of Watersheds Within WMU-0201

The *Saluda River Basin* within watershed management unit (WMU) 0201 encompasses 16 watersheds, some 1,600 square miles, with geographic regions that extend from the Blue Ridge (mountain) to the Piedmont. The 1,020,790 acres in the management unit area is comprised of 10.2% urban land, 12.3% agricultural land, 14.9% scrub/shrub land, 0.6% barren land, 60.3% forested land, and 1.7% water (SCLRCC 1990). The City of Greenville is the predominant urban feature. No wetlands were defined from the satellite imagery. There are a total of 1,947.9 stream miles in WMU-0201.

The Oolenoy River flows into the South Saluda River, which merges with the North Saluda River to form the Saluda River. Downstream from the confluence, the Saluda River flows past the City of Greenville and is joined by Georges Creek, Big Brushy Creek, Big Creek, and Broad Mouth Creek before forming the headwaters of Lake Greenwood. The Reedy River is joined by Huff Creek and flows through Boyd Mill Pond before joining the Saluda River in the Lake Greenwood headwaters. Rabon Creek flows out of Lake Rabon and into the Reedy River arm of Lake Greenwood. Just downstream of the lake, Ninety Six Creek flows into the Saluda River near the Town of Greenwood. The Little River originates and flows through WMU-0201, and drains into the Saluda River in WMU-0202.

Climate

Normal yearly rainfall in the WMU-0201 area was 60.97 inches, according to the S.C. historic climatological record (SCWRC 1990). Data compiled from National Weather Service stations in Caesars Head, West Pelzer, Greenwood, Laurens, Chappells, Cleveland, and Ware Shoals were used to determine the general climate information for this portion of the State. Within the three Saluda-Edisto watershed management units, the highest level of rainfall occurred in WMU-0201, which is characteristic of the mountains and upper piedmont region. The highest seasonal rainfall occurred in the spring with 15.47 inches; 13.43, 11.81, and 14.08 inches of rain fell in the summer, fall, and spring, respectively. The average annual daily temperature was 58.6°F, the coolest in the state. Spring temperatures averaged 58.5°F and summer, fall, and winter mean temperatures were 75.1, 59.5°F, and 41.3°F, respectively.

Monitoring Station Descriptions in WMU-0201

03050109-010
(North Saluda River)

General Description

Watershed 03050109-010 is located in Greenville County and consists primarily of the **North Saluda River** and its tributaries. The watershed occupies 46,536 acres of the Blue Ridge and Piedmont regions of South Carolina. The predominant soil types consist of an association of the Ashe-Cecil series. The erodibility of the soil (K) averages 0.25; the slope of the terrain averages 25%, with a range of 2-65%. Land use/land cover in the watershed includes: 1.54% urban land, 4.43% agricultural land, 0.72% scrub/shrub land, 0.46% barren land, 90.78% forested land, and 2.07% water.

The North Saluda River originates near the State boundary with North Carolina and flows through Poinsett Reservoir, which is also known as the North Saluda Reservoir. Tributaries of Poinsett Reservoir include: Brice Creek, Brushy Creek, Big Falls Creek (Falls Creek, Posey Creek, Guest Creek), and Little Falls Creek. The portion of the North Saluda River from its headwaters to and including Poinsett Reservoir (drinking water reservoir for the City of Greenville) and its tributaries are classified ORW. The North Saluda River flows out of Poinsett Reservoir and accepts drainage from Calahan Branch, Beaverdam Creek (Terry Creek, Short Branch), Sprigg Creek, Bull Creek, and Talley Creek. Another Beaverdam Creek enters the river near the Town of Marietta as does Whitmire Creek. The river and its tributaries downstream of Poinsett Reservoir are classified FW. There are a total of 97.3 stream miles in this watershed. Pleasant Ridge State Park is located in this watershed near the headwaters of the upper Beaverdam Creek.

Water Quality

North Saluda River - There are three monitoring stations along the North Saluda River, which was Class B until April, 1992. Bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses may be threatened at the upstream site due to elevated concentrations of zinc, including a very high concentration measured in 1990. This is compounded by significantly declining trends in dissolved oxygen and pH, and a significantly increasing trend in turbidity. Derivatives of DDT (P,P'DDT and P,P'DDE) were detected in sediment in 1989. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported at the upstream site.

At the midstream site, aquatic life uses are fully supported based on macroinvertebrate community data. Aquatic life uses are also fully supported at the downstream site, but significantly increasing trends in pH and turbidity may be a cause for concern. The turbidity is most likely due to nonpoint source runoff. Recreational uses are not supported at the downstream station due to fecal coliform bacteria excursions under Class FW standards.

Poinsett Reservoir - Aquatic life uses are fully supported, but a significantly increasing trend in pH may be a cause for concern. Toluene was detected in 1988 and di-n-butyl phthalate was detected in 1989, but neither was in excess of the aquatic life criteria. Recreational uses are fully supported.

Sanitary Bathing Areas

RECREATIONAL STREAM BATHING SITE

PERMIT # STATUS

NORTH SALUDA RIVER
LOOK-UP LODGE

23-N14
ACTIVE

NORTH SALUDA RIVER TRIB
PLEASANT RIDGE STATE PARK

23-N13
ACTIVE

NORTH SALUDA RIVER TRIB
CAMP OLD INDIAN

23-N08
ACTIVE

Water Supply

WATER USER (TYPE)
GREENVILLE WATER SYSTEM (M)

STREAM
POINSETT RES.

AMOUNT WITHDRAWN (MGD)
29.05

Point Source Contributions

*RECEIVING STREAM
FACILITY NAME
PERMITTED FLOW @ PIPE (MGD)
COMMENT*

*NPDES#
TYPE
LIMITATION (EL/WQL)*

NORTH SALUDA RIVER
JPS CONVERTER & INDUSTRIES
PIPE #: 001 FLOW: RR
NON-CONTACT COOLING WATER

SC0002216
MINOR INDUSTRIAL
EFFLUENT

NORTH SALUDA RIVER
JPS CONVERTER & INDUSTRIES
PIPE #: 002 FLOW: RR
NON-CONTACT COOLING WATER

SC0002216
MINOR INDUSTRIAL
EFFLUENT

NORTH SALUDA RIVER
JPS CONVERTER & INDUSTRIES
PIPE #: 003 FLOW: RR
AIRWASHER WATER; WQL FOR BOD5

SC0002216
MINOR INDUSTRIAL
WATER QUALITY

NORTH SALUDA RIVER
WCRSA/SLATER/MARIETTA
PIPE #: 001 FLOW: 0.672
WQL FOR TRC

SC0026883
MINOR MUNICIPAL
WATER QUALITY

TERRY CREEK
HERITAGE FARMS ASSOC.
PIPE #: 001 FLOW: 0.15
SALMONIDS PRESENT; WQL FOR NH3-N AND TRC

SC0043184
MINOR COMMUNITY
WATER QUALITY

Growth Potential

There is a low potential for development within this mountainous watershed. The watershed was recently protected by the City of Greenville and the Nature Conservancy as the Greenville Water Commission Watershed.

03050109-020
(South Saluda River)

General Description

Watershed 03050109-020 is located in Pickens and Greenville Counties and consists primarily of the ***South Saluda River*** and its tributaries. The watershed occupies 85,627 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Ashe-Hayesville series. The erodibility of the soil (K) averages 0.22; the slope of the terrain averages 25%, with a range of 2-80%. Land use/land cover in the watershed includes: 0.93% urban land, 2.71% agricultural land, 1.37% scrub/shrub land, 0.20% barren land, 93.66% forested land, and 1.14% water.

The South Saluda River flows through Table Rock Reservoir and is joined by several tributaries before merging downstream with the North Saluda River. The headwaters of the South Saluda River accepts drainage from Laurel Creek (Big Spring Creek, Rock Laurel Branch) and Flatrock Creek before entering Table Rock Reservoir. Slicking Creek (Little Table Rock Creek, Chestnut Cove) and Galloway Branch flow directly into the reservoir. The South Saluda River and its tributaries, from the headwaters through and including Table Rock Reservoir, is classified ORW. Matthews Creek (Julian Creek) enters the South Saluda River below the reservoir followed by West Fork (Wattacoo Creek, Robinson Branch), the Oolenoy River watershed (03050109-030), and Spain Creek. Julian Creek and Matthews Creek from their headwaters to the end of State land in the Mountain Bridge area are classified ORW.

The most predominant tributary to the South Saluda River is the Middle Saluda River, which originates in Caesars Head State Park and accepts drainage from Coldspring Branch, Gap Creek (Falls Creek, Trammell Lake, Friddle Lake, Bluff Branch, Tankersly Branch, Peters Branch, Cherry Branch), Oil Camp Creek, Jane Branch, Devils Fork Creek, Cox Creek (Grissom Branch), Mill Creek, Wolf Creek, and Spout Spring Branch before flowing into the South Saluda River. Coldspring Branch and the Middle Saluda River from their headwaters to the end of State land are classified ORW. A five-mile segment of the Middle Saluda River is protected under the South Carolina Scenic Rivers Program. Peters Creek and Carpenter Creek flow into the South Saluda River at the base of the watershed. There are a total of 185.4 stream miles in this watershed, and with the exception of the ORW streams mentioned above, the remaining streams are classified FW. Due to the absence of point source dischargers and the presence of endangered species, several streams (or portions of streams) may qualify as potential ORW candidates: West Fork, Wattacoo Creek, Falls Creek, and additional portions of Oil Camp Creek and the Middle Saluda River.

Other natural resource areas in this watershed including Table Rock State Park, Caesars Head State Park, and Jones Gap State Park. Table Rock Reservoir is used for municipal purposes only by the Greenville Water Commission.

Water Quality

South Saluda River - There are five SCDHEC monitoring sites along the South Saluda River. This stream was Class B until April, 1992 and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Aquatic life and recreational uses are fully supported at the two furthest

upstream sites (S-320 and S-318). At the next site downstream (S-771), aquatic life uses are fully supported based on macroinvertebrate community data. Aquatic life uses are also fully supported at the fourth site downstream (S-087), although a high concentration of zinc was measured in 1988. Recreational uses are only partially supported at this station due to fecal coliform bacteria excursions under Class FW standards. Aquatic life uses are fully supported at the furthest downstream site (S-299); however, recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Table Rock Reservoir - Aquatic life uses may be threatened due to elevated concentrations of zinc, including a very high concentration measured in 1992. A bactericide (2,4,5, trichlorophenol) was detected in 1988 and an insecticide (diethyl phthalate) was detected in 1989; however, neither exceeded acute aquatic life criteria. Recreational uses are fully supported.

Table Rock State Park Swimming Lake - The lake has been treated by the Water Resources Division of the SCDNR annually for the past five years with aquatic herbicides in an attempt to control the aquatic plants that prevent access to the lake for swimming and boating. In addition, grass carp, a biological control agent, was introduced in 1993 at the stocking rate of 20 fish/vegetated acre for a total of 200 fish.

Matthews Creek - Aquatic life and recreational uses are fully supported.

Middle Saluda River - There are four SCDHEC monitoring sites along the Middle Saluda River. At the furthest upstream site (S-076), aquatic life uses are fully supported based on macroinvertebrate community data. The next two sites downstream (S-077 and S-316) also fully support aquatic life uses. Although there were fecal coliform bacteria excursions at these stations, due to the small number of samples, recreational uses are considered to be fully supported. Aquatic life uses are fully supported at the furthest downstream site (S-252). Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform bacteria concentration.

Oil Camp Creek - Aquatic life uses are fully supported. Although there were fecal coliform bacteria excursions, due to the small number of samples, recreational uses are fully supported.

Sanitary Bathing Areas

RECREATIONAL STREAM BATHING SITE	PERMIT # STATUS
MIDDLE SALUDA RIVER TRIB CAMP GREENVILLE	23-N11 ACTIVE
FRIDDLE LAKE PALMETTO BIBLE CAMP	23-N22 CHURCH
GAP CREEK CAMP WABAK	23-N07 ACTIVE

GAP CREEK
CAMP AWANITA VALLEY

23-N06
CHURCH

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
GREENVILLE WATER SYSTEM (M)	TABLE ROCK RES.	16.53

Point Source Contributions

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION (EL/WQL)</i>
<i>COMMENT</i>	
SOUTH SALUDA RIVER MILLIKEN & CO./GAYLEY PLANT PIPE #: 001 FLOW: 1.1 WQL FOR NH3-N	SC0003191 MAJOR INDUSTRIAL WATER QUALITY
MATTHEWS CREEK ASBURY HILLS UNITED PIPE #: 001 FLOW: 0.015 WQL FOR TRC	SC0029742 MINOR COMMUNITY WATER QUALITY

Nonpoint Source Contributions

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
<i>COMMENT</i>	
HENDRIX SAND COMPANY HENDRIX MINE INSTREAM DREDGING (SOUTH SALUDA RIVER)	0717-39 SAND
MARIETTA SAND COMPANY MARIETTA SAND MINE INACTIVE DREDGING (SOUTH SALUDA RIVER)	0640-23 SAND

Growth Potential

There is a low potential for development or intensive agriculture in this mountainous watershed, which is predominately protected as park and forest by Caesars Head and Table Rock State Parks. The primary uses of the watershed are recreation and preservation; however, some relatively small clear and selective cut timber harvesting activities occur on the private land holdings. U.S. Highway 276 crosses the watershed, but very little development occurs along the thoroughfare to North Carolina.

03050109-030

(Oolenoy River)

General Description

Watershed 03050109-030 is located in Pickens County and consists primarily of the *Oolenoy River* and its tributaries. The watershed occupies 28,655 acres of the Blue Ridge and Piedmont regions of South Carolina. The predominant soil types consist of an association of the Pacolet-Ashe-Cecil series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 25%, with a range of 2-80%. Land use/land cover in the watershed includes: 1.04% urban land, 4.17% agricultural land, 4.10% scrub/shrub land, 0.73% barren land, 89.53% forested land, and 0.43% water.

There are a total of 75.8 stream miles in this watershed. Tributaries of the Oolenoy River include Willis Creek, Emory Creek, Rachael Creek, Mill Creek, Carrick Creek (Green Creek, Pinnacle Lake, Oolenoy Lake), Adams Creek (Molly Branch), Weaver Creek (Burgess Creek, Cisson Creek), Hawk Creek, and Gowens Creek. Willis Creek and Emory Creek are classified ORW from their headwaters to the northern boundary of Table Rock Resort property. Green Creek and the headwaters of Carrick Creek through and including Pinnacle Lake are classified ORW, and the remaining streams in the watershed are classified FW. Table Rock State Park is another natural resource in the watershed.

Water Quality

Oolenoy River - A pH excursion occurred, however due to the small number of samples, aquatic life uses are considered fully supported. Recreational uses are also fully supported.

Oolenoy Lake - Oolenoy Lake, located within Table Rock State Park, is categorized as a minor lake and has a watershed covering 7.2 km². The surface area of the lake is 20.2 hectares (50 acres), and has a maximum and mean depth of 9.0m and 2.7m, respectively. Thermal stratification occurs during the summer months. There are no impaired recreational usages of the lake. Oolenoy Lake is classified as Category III for the lowest trophic condition, and recommended for preservation. In 1993, in order to improve lake access for boating and swimming, the lake was treated by the Water Resources Division of the SCDNR with aquatic herbicides and stocked with triploid grass carp in an effort to control the submerged aquatic macrophytes. The stocking rate was 20 fish/vegetated acre, for a total of 700 fish.

Sanitary Bathing Areas

*RECREATIONAL STREAM
BATHING SITE*

MILL CREEK

*PERMIT #
STATUS*

ACTIVE

Point Source Contributions

RECEIVING STREAM
FACILITY NAME
PERMITTED FLOW @ PIPE (MGD)
COMMENT

NPDES#
TYPE
LIMITATION (EL/WQL)

CARRICK CREEK
SCDPRT/TABLE ROCK
PIPE #: 001 FLOW: 0.013
PACKAGE PLANT; WQL FOR TRC

SC0024864
MINOR COMMUNITY
WATER QUALITY

CARRICK CREEK
SCDPRT/TABLE ROCK
PIPE #: 001 FLOW: 0.035
AERATED LAGOON; WQL FOR NH3-N, TRC

SC0024856
MINOR COMMUNITY
WATER QUALITY

Growth Potential

There is an overall low potential for development or intensive agriculture in this watershed; however, there is a high potential for low density residential and tourist commercial development where Scenic S.C. Highway 11 crosses the watershed. Several small residential subdivisions are presently under construction. There is no sewer system, so wastewater disposal for these new areas are by septic tanks. Highway 11 and its associated development runs along the Oolenoy River, and therefore could potentially adversely impact this stream. There are a few, relatively small, clear and selective cut timber harvesting activities occurring on the private land holding along this watershed of mountains and rolling hills.

03050109-040

(*Saluda River*)

General Description

Watershed 03050109-040 is located in Pickens and Greenville Counties and consists primarily of the *Saluda River* and its tributaries from its origin to Big Creek. The watershed occupies 21,175 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Madison-Cecil-Davidson series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 25%, with a range of 2-80%. Land use/land cover in the watershed includes: 16.25% urban land, 13.83% agricultural land, 13.46% scrub/shrub land, 0.75% barren land, 54.93% forested land, and 0.77% water.

Tributaries draining into the upper portion of this watershed include Shoal Creek, Armstrong Creek, Machine Creek (Doddies Creek), and Coopers Creek. The Saluda River then flows through Saluda Lake (used for power, municipal, and industrial purposes) in the City of Greenville, and is joined by Mill Creek and the Georges Creek watershed (03050109-050). Further downstream, Craven Creek, the Big Brushy Creek watershed (03050109-060), and Hurricane Creek drain into the river. Little Grove Creek and another Mill Creek join to form Grove Creek, which flows into the river at the base of the watershed. This watershed contains a total of 193.4 stream miles, all classified FW.

Water Quality

Saluda River - There are three SCDHEC monitoring sites along this section of the Saluda River, which was Class B until April, 1992. Bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Upstream of Saluda Lake, aquatic life uses are fully supported. Derivatives of DDT (P,P'DDT and P,P'DDE) were detected in sediment in 1989 and 1990 at this location. The use of DDT was banned in 1973, but it is very persistent in the environment. A high concentration of copper, and very high concentrations of nickel and zinc were also measured in the 1990 sediment sample. Recreational uses are only partially supported at this upstream station due to fecal coliform bacteria excursions under Class FW standards.

Aquatic life uses may be threatened at the midstream site due to very high concentrations of zinc measured in 1988 and 1989. This is compounded by a significantly declining trend in dissolved oxygen concentration and a significantly increasing trend in pH. Recreational uses are fully supported at the midstream site. Aquatic life uses are fully supported at the downstream site, but a significantly increasing trend in turbidity may be cause for concern. Recreational uses are only partially supported at this station due to fecal coliform bacteria excursions under Class FW standards.

Saluda Lake - Saluda Lake is categorized as a minor lake and has a watershed covering 674.4km. The lake has a surface area of 202.3 hectares and a maximum and mean depth of 12.2m and 2.4m, respectively; thermal stratification occurs during the summer months. There are no impaired recreational usages of the lake. Saluda Lake's trophic condition has improved and has been reclassified from a Category II to a

Category III for the lowest trophic condition, and is recommended for preservation. Aquatic life and recreational uses are fully supported.

Unnamed Saluda River Tributary - Aquatic life uses are only partially supported due to pH excursions. This is compounded by a significantly declining trend in dissolved oxygen concentrations and a significantly increasing trend in turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards. This creek was Class B until April, 1992 and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed.

Mill Creek - Aquatic life uses are not supported in Mill Creek (S-315) and an unnamed tributary (S-161), due to very high concentrations of chromium, the median of which exceeded the human health criterion. Signs have been posted on this creek advising people to avoid swimming, wading, drinking, or other contact with water from the creek, and not to consume fish from the creek. The chromium source is ground water contamination originating at the old Carolina Plating and Stamping site. A very high concentration of zinc was measured at the Mill Creek site in 1992. In the unnamed tributary, low dissolved oxygen is an additional factor in aquatic life use nonsupport. Recreational uses are not supported in Mill Creek or the unnamed tributary due to fecal coliform bacteria excursions under Class FW standards.

Grove Creek - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards. This creek was Class B until April, 1992 and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses are fully supported at the downstream station based on macroinvertebrate community data.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
EASLEY COMBINED UTILITY (M)	SALUDA LAKE	6.100
GERBER CHILDRENSWEAR (I)	SALUDA RIVER	5.760
SOFT CARE APPAREL (I)	SALUDA RIVER	2.880

Point Source Contributions

Mill Creek and an unnamed tributary are included on the §303(d) low priority list of waters which may require TMDL development due to fecal coliform and toxics. The Saluda River is included on the §304(l) long list of impacted waterbodies due to point source concerns for non-§307(a) toxic pollutants. Grove Creek and an unnamed tributary to the Saluda River are both included on the §304(l) long list due to nontoxic pollutant concerns.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SALUDA RIVER DUKE POWER CO./LEE STEAM STATION	SC0002291 MAJOR INDUSTRIAL

PIPE #: 001 FLOW: ---- COOLING WATER; INTAKE SCREEN BACKWASH	EFFLUENT
SALUDA RIVER DUKE POWER CO./LEE STEAM STATION PIPE #: 002 FLOW: ---- COOLING WATER	SC0002291 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER DUKE POWER CO./LEE STEAM STATION PIPE #: 003 FLOW: ---- COOLING TOWER OVERFLOW	SC0002291 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER DUKE POWER CO./LEE STEAM STATION PIPE #: 004 FLOW: ---- ASH BASIN DISCHARGE	SC0002291 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER WCRSA/PIEDMONT PLANT PIPE #: 001 FLOW: 1.200 WQL FOR DO	SC0023906 MAJOR MUNICIPAL WATER QUALITY
SALUDA RIVER WCRSA/SALUDA RIVER PLANT PIPE #: 001 FLOW: 0.500 WQL FOR DO	SC0034568 MINOR MUNICIPAL WATER QUALITY
SALUDA RIVER WCRSA/VICE DALE PLANT PIPE #: 001 FLOW: 0.035	SC0036072 MINOR MUNICIPAL EFFLUENT
SALUDA RIVER WCRSA/PARKER PLANT PIPE #: 001 FLOW: 0.20 PROPOSED EXPANSION TO 0.40	SC0037451 MINOR MUNICIPAL EFFLUENT
SALUDA RIVER WCRSA/LAKESIDE PLANT PIPE #: 001 FLOW: 0.7	SC0037460 MINOR MUNICIPAL EFFLUENT
SALUDA RIVER TOWN OF PELZER PIPE #: 001 FLOW: 0.20	SC0040797 MINOR MUNICIPAL EFFLUENT
SALUDA RIVER TOWN OF WILLIAMSTON PIPE #: 001 FLOW: 1.0 PROPOSED FACILITY	SC0025976 MAJOR MUNICIPAL EFFLUENT
SALUDA RIVER SOFT CARE APPAREL PIPE #: 001 FLOW: 6.0 ONCE THROUGH NON-CONTACT COOLING WATER	SC0027677 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER EASLEY COMBINED UTILITY PIPE #: 001 FLOW: 1.0 PROPOSED; WQL FOR NH3-N, DO, TRC	SC0023256 MAJOR MUNICIPAL WATER QUALITY

SALUDA RIVER TRIB VULCAN MATERIALS CO. PIPE #: 001 FLOW: M/R WASHWATER; STORMWATER	SC0002950 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER TRIB BIBB TOWELS, INC. PIPE #: 002 FLOW: ---- RECIRCULATED NON-CONTACT COOLING WATER	SC0003565 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER TRIB MILLIKEN & CO./PEERLESS PLT PIPE #: 001 FLOW: M/R COOLING WATER DISCHARGE	SC0023442 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER TRIB TOWN OF WEST PELZER PIPE #: 001 FLOW: 0.200 PROPOSED FOR ELIMINATION; WQL FOR NH3-N, DO, TRC	SC0025194 MINOR MUNICIPAL WATER QUALITY
SALUDA RIVER TRIB H&H HOMETOWN FOOD PIPE #: 001 FLOW: 0.0186 WQL FOR NH3-N, TRC	SC0028371 MINOR MUNICIPAL WATER QUALITY
SALUDA RIVER TRIB FOREST HILL SD PIPE #: 001 FLOW: 0.008 WQL FOR NH3-N, DO, TRC	SC0028525 MINOR MUNICIPAL WATER QUALITY
SHOAL CREEK DACUSVILLE ELEM. & HIGH SCHOOL PIPE #: 001 FLOW: 0.014 WQL FOR NH3-N, TRC	SC0028754 MINOR MUNICIPAL WATER QUALITY
SALUDA LAKE EASLEY COMBINED UTILITY PIPE #: 001 FLOW: 0.454 CONVERTED TO GENERAL PERMIT #SCG641007	SC0023256 MINOR INDUSTRIAL EFFLUENT
GROVE CREEK WCRSA/GROVE CREEK PLT PIPE #: 001 FLOW: 2.000 WQL FOR NH3-N, TRC, DO	SC0024317 MAJOR MUNICIPAL WATER QUALITY
GROVE CREEK TRIB AMOCO PERFORMANCE PRODUCTS PIPE #: 001 FLOW: 0.0199 NON-CONTACT COOLING WATER	SC0000906 MINOR INDUSTRIAL EFFLUENT
GROVE CREEK TRIB AMOCO PERFORMANCE PRODUCTS PIPE #: 002 FLOW: ---- NON-CONTACT COOLING WATER	SC0000906 MINOR INDUSTRIAL EFFLUENT
GROVE CREEK TRIB AMOCO PERFORMANCE PRODUCTS PIPE #: 003 FLOW: ---- NON-CONTACT COOLING WATER	SC0000906 MINOR INDUSTRIAL EFFLUENT

GROVE CREEK TRIB
 DELTA MILLS/ESTES PLT
 PIPE #: 001 FLOW: ----
 COOLING WATER; BOILER WATER

SC0002127
 MINOR INDUSTRIAL
 EFFLUENT

GROVE CREEK TRIB
 DELTA MILLS/ESTES PLT
 PIPE #: 002 FLOW: ----
 COOLING WATER

SC0002127
 MINOR INDUSTRIAL
 EFFLUENT

GROVE CREEK TRIB
 VALLEY BROOK SD
 PIPE #: 001 FLOW: 0.06
 WQL FOR NH3-N, DO, TRC

SC0028673
 MINOR COMMUNITY
 WATER QUALITY

***LAND APPLICATION
 FACILITY NAME***

***PERMIT #
 TYPE***

SPRAY IRRIGATION
 AIR PRODUCTS

ND0003000
 MINOR INDUSTRIAL

Nonpoint Source Contributions

The Saluda River is included on the §319 list of waters impacted by agricultural and construction activities and urban runoff. Information supplied by Department District Engineers and water samples collected by the Department indicate elevated turbidity levels on numerous occasions, and scattered elevated levels of toxic materials (metals and pesticides). Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff for this stream.

Landfill Activities

***SOLID WASTE LANDFILL NAME
 FACILITY TYPE***

***PERMIT #
 STATUS***

PIEDMONT LANDFILL #1
 MUNICIPAL

DWP-009
 CLOSED

PIEDMONT LANDFILL, PHASE
 MUNICIPAL

DWP-074
 CLOSED

PIEDMONT LANDFILL #3
 MUNICIPAL

DWP-095
 CLOSED

GREATER GREENVILLE LANDFILL
 MUNICIPAL

DWP-022
 CLOSED

BLACK BERRY VALLEY LANDFILL
 MUNICIPAL

DWP-107
 CLOSED

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i> <i>COMMENT</i>	<i>PERMIT #</i> <i>MINERAL</i>
THOMAS SAND COMPANY RIVER ROAD PLANT INACTIVE INSTREAM DREDGING (SALUDA RIVER)	0908-04 SAND
THOMAS SAND COMPANY PIEDMONT PLANT INACTIVE INSTREAM DREDGING (SALUDA RIVER)	0745-23 SAND
VULCAN MATERIALS CO. LAKESIDE QUARRY	0064-23 GRANITE

Ground Water Concerns

The ground water in the area owned by Carolina Plating & Stamping is contaminated with metals as a result of a spill. The facility is currently pumping a recovery trench and performing an additional assessment; an additional recovery well is planned. The surface water affected by the ground water contamination is Mill Creek, which flows directly into the Saluda River in the upper region of the watershed.

The ground water in the vicinity of the land owned by JP Stevens (Piedmont Plant) is contaminated with volatile organics from unpermitted disposal practices. The facility is in the assessment phase. The surface water affected by the ground water contamination is an unnamed tributary to the Saluda River near the Big Brushy Creek drainage.

Growth Potential

The watershed topography runs from very hilly in the upper region to rolling hills at the base. The upper area of the watershed has a fairly low potential for extensive development or intensive agricultural (other than orchards), except for nonintensive agricultural and low density residential activity along the Saluda River. The center and lower regions of the watershed have a relatively high potential for urban development; rail lines run through these areas along the Saluda River. The Saluda River bisects the U.S. Highway 123 high growth corridor between the Cities of Easley and Greenville. There are some clear and selective cut timber harvesting activities occurring on the private land holdings within the watershed.

03050109-050

(*Georges Creek*)

General Description

Watershed 03050109-050 is located in Pickens County and consists primarily of *Georges Creek* and its tributaries. The watershed occupies 21,175 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.25; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 17.30% urban land, 13.74% agricultural land, 2.62% scrub/shrub land, 0.57% barren land, 64.58% forested land, and 1.18% water.

The Georges Creek watershed drains into the Saluda River near the City of Greenville. Tributaries draining into Georges Creek include Mad Dog Branch, Burdine Creek, Hamilton Creek (East Creek, Middle Creek), Little Georges Creek, and Crayton Creek. There are a total of 49.8 stream miles in this watershed, all classified FW. Georges Creek Lake (47 acres) is used for flood control and recreation.

Water Quality

Georges Creek - There are two SCDHEC monitoring sites along Georges Creek, and aquatic life uses are fully supported at both sites. Recreational uses are not supported at either site due to fecal coliform bacteria excursions under Class FW standards.

Georges Creek Tributary - Aquatic life uses are fully supported, but a significantly increasing trend in turbidity, most likely due to nonpoint source runoff, may be a cause for concern. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

Georges Creek and an unnamed tributary are included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform levels. Hamilton Creek is included on the §304(l) short list for waters not expected to meet applicable water quality standards after full implementation of NPDES permit conditions due, in part or entirely, to point source discharges of §307(a) toxics; Hollingsworth Saco Lowell Corporation was the facility discharging the toxic effluent (Chromium, Copper, and Zinc). Hamilton Creek is also included on the §304(l) long list of impacted waterbodies due to concerns for ambient toxicity.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
GEORGES CREEK EASLEY COMBINED UTILITY/GEORGES CREEK PLT PIPE #: 001 FLOW: 0.82 WQL FOR NH3-N, DO, TRC	SC0023043 MINOR MUNICIPAL WATER QUALITY

BURDINE CREEK
ALICE MFG/ELLISON PLANT
PIPE #: 001 FLOW: 0.0004
AIR WASH WATER

SC0001171
INDUSTRIAL
EFFLUENT

BURDINE CREEK
ALICE MFG/ELLISON PLANT
PIPE #: 002 FLOW: 0.017
WQL FOR NH3-N, TRC, BOD5

SC0001171
MINOR INDUSTRIAL
WATER QUALITY

HAMILTON CREEK
HOLLINGSWORTH SACO LOWELL CORP.
PIPE #: 001 FLOW: .399
WQL FOR NH3-N, TRC

SC0001155
MAJOR INDUSTRIAL
WATER QUALITY

HAMILTON CREEK
CROSSWELL ELEM. SCHOOL
PIPE #: 001 FLOW: 0.0105

SC0037486
MINOR MUNICIPAL
EFFLUENT

HAMILTON CREEK TRIB
EASLEY SITE TRUST
PIPE #: 001 FLOW: 0.025

SC0046396
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Contributions

Georges Creek is included on the §319 list of waters impacted by agricultural and construction activities. Water samples collected by the Department indicate elevated levels of fecal coliform on numerous occasions. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream. Georges Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Ground Water Concerns

The ground water in the vicinity of the landfill owned by Hollingsworth Saco Lowell Corp. is contaminated with volatile organics and metals (Chromium, Copper, and Zinc). This is a RCRA facility and installation of a remediation system is underway to treat the ground water contamination. The surface waters affected by the ground water contamination are East Creek and Middle Creek, which drain into Hamilton Creek. A surface water treatment is now operational on East Creek, and is reported to be 99% effective.

Growth Potential

There is a high potential for urban development in this watershed which contains the City of Easley, a population growth area. The area north and east of Easley to the Saluda River has recently been cited in the Appalachian Regional Development Plan as an infrastructure expansion area with potential for both industrial and residential growth. The area where U.S. Highway 123 crosses this watershed is lined with strip shopping centers, fast food restaurants, and large parking areas. Behind this line of fast development are located both residential and industrial areas.

03050109-060
(Big Brushy Creek)

General Description

Watershed 03050109-060 is located in Pickens and Anderson Counties and consists primarily of **Big Brushy Creek** and its tributaries. The watershed occupies 25,075 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 16.72% urban land, 21.66% agricultural land, 21.66% scrub/shrub land, 0.85 barren land, 38.64% forested land, and 0.47% water.

The Big Brushy Creek watershed drains into the Saluda River near the Town of Piedmont. Big Brushy Creek is formed by the confluence of Brushy Creek and Middle Branch (Hornbuckle Creek). Little Brushy Creek flows into Big Brushy Creek near the base of the watershed. This watershed contains a total of 52.0 stream miles, all classified FW. There are several small lakes (12-30 acres) in the watershed used for flood control and recreation.

Water Quality

Big Brushy Creek - There are two SCDHEC monitoring sites along Big Brushy Creek, and aquatic life uses are fully supported at both sites. Recreational uses are only partially supported at the upstream site due to fecal coliform bacteria excursions under Class FW standards, but a significantly declining trend in bacteria suggests improving conditions. Recreational uses are fully supported at the downstream site.

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
LITTLE BRUSHY CREEK WREN SCHOOL/ANDERSON DIST. I PIPE #: 001 FLOW: 0.05 WQL FOR NH3-N, DO, TRC, BOD5	SC0026760 MINOR COMMUNITY WATER QUALITY
MIDDLE BRANCH EASLEY COMBINED UTILITY/MIDDLE BRANCH PLT PIPE #: 001 FLOW: 2.5 WQL FOR NH3-N, DO, TRC	SC0039853 MAJOR MUNICIPAL WATER QUALITY

Nonpoint Source Contributions

Big Brushy Creek is included on the §319 list of watersheds targeted for implementation action due to agricultural activities. Water samples collected by the Department indicate elevated levels of fecal coliform on numerous occasions. Big Brushy Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

The southern edge of the City of Easley is a high growth area, together with the I-85 corridor which passes through the southeastern portion of the watershed. Other areas of potential growth are the presently unserved interstate interchanges, which have regional plans to be upgraded with water and sewer to encourage development. There are also several industrial sites dispersed through the watershed.

03050109-070

(*Big Creek*)

General Description

Watershed 03050109-070 is located in Anderson County and consists primarily of *Big Creek* and its tributaries. The watershed occupies 11,193 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 18.42% urban land, 22.59% agricultural land, 22.29% scrub/shrub land, 1.04% barren land, 33.09% forested land, and 2.58% water.

Big Creek flows through Big Creek Reservoir and is joined by Camp Creek (Camp Creek Reservoir), near the Town of Williamston, before draining into the Saluda River. This watershed contains a total of 26.7 stream miles, all classified FW. Big Creek Reservoir (93 acres) and Camp Creek Reservoir (36 acres) are used for flood control and recreation.

Water Quality

Big Creek - Aquatic life uses are fully supported. Although there were fecal coliform excursions, due to the small number of samples, recreational uses are considered to be fully supported.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
TOWN OF WILLIAMSTON (M)	BIG CREEK RES.	0.612
TOWN OF WILLIAMSTON (M)	CAMP CREEK RES.	0.612

Point Source Contributions

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
BIG CREEK TOWN OF WILLIAMSTON/BIG CREEK PLT PIPE #: 001 FLOW: 1.0 WQL FOR NH3-N, DO, TRC PROPOSED FOR ELIMINATION TO SALUDA RIVER	SC0025976 MAJOR MUNICIPAL WATER QUALITY
BIG CREEK TOWN OF WILLIAMSTON/WATER TRT PLT PIPE #: 001 FLOW: 0.14 WQL FOR TRC	SC0032646 MINOR INDUSTRIAL WATER QUALITY
BIG CREEK TRIB FIELDCREST CANNON/BELTON PLT PIPE #: 001 FLOW: 0.013 WQL FOR NH3-N, DO, TRC, BOD5	SC0023213 MINOR INDUSTRIAL WATER QUALITY

Growth Potential

Overall, there is a fairly low potential for intensive urban growth in this watershed, except for the area directly adjacent to the Saluda River. The Town of Williamston, although not a high growth area, is expected to experience low to moderate growth. A rail line crosses the watershed running from The Town of Williamston to the Town of Pelzer (en route to the City of Greenville) and contributes to the growth in the area.

03050109-080

(*Saluda River*)

General Description

Watershed 03050109-080 extends through Anderson, Greenville, Abbeville, Laurens, Greenwood, and Newberry Counties and consists primarily of the *Saluda River* and its tributaries from Big Creek to the Lake Greenwood dam. The watershed occupies 176,703 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes series. The erodibility of the soil (K) averages 0.25; the slope of the terrain averages 15%, with a range of 2-45%. Land use/land cover in the watershed includes: 2.68% urban land, 10.99% agricultural land, 21.70% scrub/shrub land, 0.55% barren land, 57.77% forested land, and 6.31% water.

There are a total of 294.8 stream miles in this watershed, all classified FW. Toney Creek, Mountain Creek, Little Creek, and the Broadmouth Creek watershed (03050109-090) drain into the Saluda River in the upper portion of this watershed, and further downstream Turkey Creek (Goose Creek, Gypsy Creek, Gibson Creek, Dunns Creek, Little Turkey Creek) enters the river to form an arm of Lake Greenwood. Tributaries of the western side of Lake Greenwood include Mulberry Creek (Dudley Creek), Camp Branch, and Quarter Creek. The Reedy River watershed (03050109-120) and the Rabon Creek watershed (03050109-130) join to form another arm of the lake. Also flowing into the eastern lake shore are Long Lick Branch and Cane Creek. As a reach of the Saluda River, this watershed accepts the drainage of all streams entering the river upstream of the watershed. Another natural resource in this watershed is Greenwood State Park, which is located on the western shores of Lake Greenwood. Lake Greenwood is used for recreation, power generation, municipal purposes, and water supply.

Water Quality

Saluda River - Aquatic life uses are not supported for this section of the Saluda River due to methoxychlor (a pesticide) measured in excess of the acute aquatic life criterion in 1992. This is compounded by a significantly declining trend in dissolved oxygen concentration and a significantly increasing trend in turbidity, most likely the result of nonpoint source runoff. Dibromochloromethane (a trihalomethane) was detected in water in 1988. Recreational uses are fully supported.

Lake Greenwood - Lake Greenwood is categorized as a major lake and has a watershed covering 1999.5km². The lake has a surface area of 4613.5 hectares, and a maximum and mean depth of 21.0m and 7.0m, respectively. There are four SCDHEC monitoring sites along Lake Greenwood and aquatic life and recreational uses are fully supported at all four sites. Excursions of pH occurred in the Reedy River arm (S-022), the main body of the lake (S-131), and near the dam (S-303); however, higher levels occur naturally in lakes with significant phytoplankton communities and are considered natural conditions, not standards violations. Notable trends in the lake include a significantly declining trend in dissolved oxygen concentration in the Reedy River arm, and a significantly declining trend in pH in the main lake body, both warranting continued observation.

The lake has been treated with aquatic herbicides from 1989-91 and 1993-94 by the Water Resources Division of the SCDNR in an effort to control the aquatic macrophytes. A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in the lake system was nitrogen. Eutrophication studies classify the headwaters of Lake Greenwood as Category II for intermediate trophic condition, which could be susceptible to further degradation. The dam area is classified as Category III and is recommended for preservation. The water quality trend data from 1980-1990 indicates that the headwaters and the dam area have improving conditions. The headwaters improved from Category I to Category II and the dam area improved from Category II to Category III. The Reedy River arm of the lake is classified as Category I due to its high nutrient load. Phosphorus removal from point sources has been implemented, but further watershed management is recommended to further reduce the nutrient load.

Cane Creek - There are two SCDHEC monitoring sites along Cane Creek. Aquatic life uses are fully supported at the upstream site based on macroinvertebrate community data, although habitat degradation due to sedimentation was evident. Aquatic life uses are also fully supported at the downstream site, but a significantly declining trend in dissolved oxygen concentration is cause for concern. Recreational uses are fully supported.

Sanitary Bathing Areas

<i>RECREATIONAL STREAM BATHING SITE</i>	<i>PERMIT # STATUS</i>
LAKE GREENWOOD LAURENS BAPTIST ASSEMBLY	30-N03 ACTIVE
LAKE GREENWOOD GREENWOOD STATE PARK	24-N01 ACTIVE

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
GREENWOOD CPW (M)	LAKE GREENWOOD	9.05
GREENWOOD CPW (M)	SALUDA RIVER	0.80
BELTON-HONEA PATH WATER AUTH. (M)	SALUDA RIVER	2.00

Point Source Contributions

This section of the Saluda River is included on the §303(d) high priority list of waters targeted for TMDL development in relation to toxics present in the stream. The Saluda River is also included on the §304(l) long list of impacted waterbodies due to concerns for non-§307(a) toxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SALUDA RIVER TOWN OF WARE SHOALS/DAIRY STREET	SC0020214 MAJOR MUNICIPAL

PIPE #: 001 FLOW: 6.0 WQL FOR NH3-N, DO, TRC PROPOSED EXPANSION TO 6.5 AND THEN 8.5 MGD	WATER QUALITY
SALUDA RIVER CITY OF BELTON PIPE #: 001 FLOW: 2.5	SC0045896 MAJOR MUNICIPAL EFFLUENT
SALUDA RIVER TOWN OF WILLIAMSTON/EAST WWTP PIPE #: 001 FLOW: 0.66 PROPOSED	SC0046841 MINOR MUNICIPAL WATER QUALITY
SALUDA RIVER TRIB BELTON-HONEA PATH WATER AUTH. PIPE #: 001 FLOW: 0.037 WQL FOR TRC	SC0040827 MINOR INDUSTRIAL WATER QUALITY
MOUNTAIN CREEK BOYS HOME OF THE SOUTH PIPE #: 001 FLOW: 0.01 WQL FOR NH3-N, TRC	SC0022748 MINOR MUNICIPAL WATER QUALITY
TURKEY CREEK TOWN OF HONEA PATH/CLATWORTHY PLANT PIPE #: 001 FLOW: 0.09 WQL FOR NH3-N, DO, TRC PROPOSED FOR ELIMINATION TO WARE SHOALS	SC0020656 MINOR MUNICIPAL WATER QUALITY
TURKEY CREEK MILLIKEN & CO./HONEA PATH PIPE #: 001 FLOW: M/R NON-CONTACT COOLING WATER	SC0023469 MINOR INDUSTRIAL EFFLUENT
LAKE GREENWOOD DRIFTWOOD ASSOC. PIPE #: 001 FLOW: 0.02 WQL FOR NH3-N, DO, BOD5, TP	SC0040380 MINOR MUNICIPAL WATER QUALITY
LAKE GREENWOOD LAKE GREENWOOD WTP PIPE #: 001 FLOW: M/R	SC0040983 MINOR INDUSTRIAL EFFLUENT
LAKE GREENWOOD LAKE GREENWOOD WTP PIPE #: 002 FLOW: 0.11520 ONCE THROUGH COOLING WATER	SC0040983 MINOR INDUSTRIAL EFFLUENT
CAMP BRANCH TARMAC MID-ATLANTIC/GWD QUARRY PIPE #: 001 FLOW: M/R STORMWATER	SC0002381 MINOR INDUSTRIAL EFFLUENT
CAMP BRANCH TARMAC MID-ATLANTIC/GWD QUARRY PIPE #: 002 FLOW: M/R MINING PIT DISCHARGE	SC0002381 MINOR INDUSTRIAL EFFLUENT

CAMP BRANCH
 WILSON BROTHERS SAND COMPANY, INC.
 PIPE #: 001 FLOW:----
 PROPOSED FACILITY; STORMWATER

SC0047007
 MINOR INDUSTRIAL
 EFFLUENT

***LAND APPLICATION
 FACILITY NAME***

***PERMIT #
 TYPE***

LOW PRESSURE IRRIGATION SYSTEM
 SCDPRT/GREENWOOD STATE PARK

ND0067547
 MINOR COMMUNITY

Nonpoint Source Contributions

The Saluda River and Lake Greenwood are both included on the §319 list of waters impacted by agricultural activities, and computer modelling indicates a high potential for NPS problems from agricultural activities for both areas. Water samples collected from the Saluda River by the Department and data received from outside agencies indicate elevated levels of toxic materials (pesticides), suspended solids, and turbidity on numerous occasions. Lake Greenwood is included on the §319 list of waters targeted for further evaluation and on the §304(l) long list for waters impacted by nontoxic pollutants. Samples taken by Department personnel indicate elevated nutrient levels on numerous occasions, together with scattered pH and dissolved oxygen excursions. Cane Creek is being added to the §319 list due to scattered dissolved oxygen excursions and sedimentation of the stream, which may adversely impact the macroinvertebrate community.

Landfill Activities

***SOLID WASTE LANDFILL NAME
 FACILITY TYPE***

***PERMIT #
 STATUS***

MONSANTO CO.
 INDUSTRIAL

 CLOSED

Mining Activities

***MINING COMPANY
 MINE NAME
 COMMENTS***

***PERMIT #
 MINERAL***

COOPER SAND & GRAVEL COMPANY, INC.
 COOPER SAND MINE #1
 INACTIVE INSTREAM DREDGING

0242-23
 SAND

WILSON BROTHERS SAND COMPANY, INC.
 TAYLOR MINE
 OCCASIONAL INSTREAM DIGGING W/DAGLINE

0944-30
 SAND

WILSON BROTHERS SAND COMPANY, INC.
 WILSON BROTHERS SAND MINE
 INSTREAM DREDGING W/DAGLINE ON SANDBAR

0166-01
 SAND

WILSON BROTHERS SAND COMPANY, INC.
 WARE SHOALS DIVISION MINE
 INACTIVE INSTREAM DREDGING

0011-24
 SAND

WR GRACE & CO.
EZELL MINE

0987-30
VERMICULITE

TARMAC CAROLINAS, INC.
GREENWOOD QUARRY

0134-24
GRANITE

Ground Water Concerns

The ground water in the vicinity of the landfill owned by Monsanto Co. is contaminated with volatile organic compounds. The facility is in the assessment and remediation phase. The surface water affected by the ground water contamination is an unnamed tributary of Lake Greenwood.

Growth Potential

The Towns of Donalds, Hodges, and Ware Shoals are experiencing some growth due to their close proximity to the greater Greenwood area. U.S. Highway 178 (Highway 25) and rail lines connect the towns to the City of Greenwood. There is some potential for industrial growth due to the infrastructure currently in place and the siting of the Sara Lee plant near the Town of Hodges. Infrastructure development in the Ware Shoals-Hodges area has encouraged residential and commercial growth. Lake Greenwood has experienced significant growth; however, the growth is expected to continue at a slower pace in the future. U.S. Highway 221 and a major rail line cross this watershed. A major sewer interceptor connecting Honea Path with Ware Shoals is nearing completion, and will spur growth in the area.

03050109-090
(Broad Mouth Creek)

General Description

Watershed 03050109-090 is located in Anderson and Abbeville Counties and consists primarily of **Broad Mouth Creek** and its tributaries. The watershed occupies 28,764 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 4.45% urban land, 24.28% agricultural land, 21.04% scrub/shrub land, 2.39% barren land, 47.13% forested land, and 0.70% water.

Broad Mouth Creek flows past the City of Belton and accepts the drainage of Chinquola Mill Creek (Still Branch) near the Town of Honea Path before draining into the Saluda River. This watershed contains a total of 51.6 stream miles, all classified FW. There are several ponds in the watershed (10-15 acres) used for flood control and recreation.

Water Quality

Broad Mouth Creek - There are four SCDHEC monitoring sites along Broad Mouth Creek. Aquatic life uses are not supported at the furthest upstream site (S-289) due to low dissolved oxygen concentrations, and recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations.

Further downstream (S-010), aquatic life uses are fully supported, but a significantly increasing trend in turbidity suggests nonpoint source impacts from upstream land use practices. Recreational uses are not supported at S-010, due to fecal coliform bacteria excursions under Class FW standards. This is compounded by a significantly increasing trend in fecal coliform bacteria concentrations. Aquatic life uses are fully supported at the next site downstream (S-775) based on macroinvertebrate data. Aquatic life and recreational uses are fully supported at the furthest downstream site (S-304).

Unnamed tributary to Broad Mouth Creek - Aquatic life uses are not supported based on macroinvertebrate community data, most likely a result of urban runoff from the City of Belton.

Point Source Contributions

An unnamed tributary to Broad Mouth Creek is included on the §303(d) high priority list of waters targeted for TMDL development in relation to macroinvertebrate community concerns.

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
BROAD MOUTH CREEK	SC0002887
AMERADA HESS CORP./BELTON	MINOR INDUSTRIAL

PIPE #: 001 FLOW: 0.032 WQL FOR TOXICS	WATER QUALITY
BROAD MOUTH CREEK CITY OF BELTON/DUCWORTH PLANT PIPE #: 001 FLOW: 0.785 WQL FOR NH3-N, DO, TRC PROPOSED FOR ELIMINATION	SC0020745 MINOR MUNICIPAL WATER QUALITY
BROAD MOUTH CREEK SOUTHEAST TERMINAL/BELTON PIPE #: 001 FLOW: ---	SC0025364 MINOR INDUSTRIAL EFFLUENT
BROAD MOUTH CREEK EXXON CO. USA/BELTON PIPELINE PIPE #: 001 FLOW: ---	SC0026123 MINOR INDUSTRIAL EFFLUENT
BROAD MOUTH CREEK MARATHON OIL CO./BELTON PIPE #: 001 FLOW: ---- STORMWATER RUNOFF	SC0037567 MINOR INDUSTRIAL EFFLUENT
BROAD MOUTH CREEK COLONIAL PIPELINE/BELTON PIPE #: 001 FLOW: --- STORMWATER RUNOFF	SC0041459 MINOR INDUSTRIAL EFFLUENT
BROAD MOUTH CREEK TOWN OF HONEA PATH/CORNER LAGOON PIPE #: 001 FLOW: 0.56 PROPOSED FOR ELIMINATION TO WARE SHOALS	SC0042358 MINOR MUNICIPAL WATER QUALITY
BROAD MOUTH CREEK BELTON INDUSTRIES PIPE #: 002 FLOW: 0.172 RECIRCULATED COOLING WATER	SC0000698 MINOR INDUSTRIAL EFFLUENT
BROAD MOUTH CREEK TRIB BELTON INDUSTRIES PIPE #: 001 FLOW: 0.017 WQL FOR NH3-N, DO, TRC	SC0000698 MINOR INDUSTRIAL WATER QUALITY
BROAD MOUTH CREEK TRIB CHEVRON USA, INC./BELTON PIPE #: 001 FLOW: --- WQL FOR BOD5, TOXICS	SC0043010 MINOR INDUSTRIAL WATER QUALITY
CHITUOLA MILL CREEK TOWN OF HONEA PATH/CHITUOLA PLANT PIPE #: 001 FLOW: 0.450 WQL FOR NH3-N, DO, TRC PROPOSED FOR ELIMINATION	SC0020672 MINOR MUNICIPAL WATER QUALITY
STILL BRANCH TOWN OF HONEA PATH PIPE #: 001 FLOW: 0.045 WQL FOR NH3-N, TRC; TO BE TIED INTO REGIONAL SYSTEM	SC0020664 MINOR MUNICIPAL WATER QUALITY

Nonpoint Source Contributions

Broad Mouth Creek is included on the §319 list of waters impacted by agricultural activities and urban runoff. Water samples collected by the Department indicate numerous DO excursions and elevated turbidity levels. Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff for this stream. Broad Mouth Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants. An unnamed tributary to Broad Mouth Creek has been added to the §319 list due to an impacted macroinvertebrate community.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
ANDERSON COUNTY LANDFILL MUNICIPAL	DWP-046 ACTIVE
PENDLETON LANDFILL, PHASE I MUNICIPAL	DWP-048 CLOSED

Growth Potential

The corridor that runs along U.S. Highway 76 from the Town of Honea Path to the City of Belton, and on to the Town of Williamston will continue to be a growth area.

03050109-100

(*Reedy River*)

General Description

Watershed 03050109-100 is located in Greenville County and consists primarily of the *Reedy River* and its tributaries from its origin to Huff Creek. The watershed occupies 72,588 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 54.54% urban land, 7.37% agricultural land, 7.23% scrub/shrub land, 0.14% barren land, 30.48% forested land, and 0.24% water.

The Reedy River originates near the Town of Travelers Rest and flows through the City of Greenville downstream to the Town of Fork Shoals, where it accepts the drainage of the Huff Creek watershed (03050109-110). Little Creek, Langston Creek, Long Branch, Richland Creek, and Brushy Creek (Cow Creek) drain into the Reedy River as it flows through the City of Greenville. Marrow Bone Creek and Laurel Creek enter the river near the Donaldson Industrial Park, and Maddog Creek and Rocky Creek drain into the river further downstream. This watershed contains a total of 166.4 stream miles, all classified FW. There are several small lakes above and below the City of Greenville used for recreation or industrial purposes. Swan Lake (30 acres) on the Furman University campus is used for recreation.

Water Quality

Reedy River - There are five SCDHEC monitoring sites along this section of the Reedy River, which was Class B until April, 1992. Bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses are fully supported at the furthest upstream site (S-073), but may be threatened by a significantly declining trend in dissolved oxygen concentration. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform concentrations.

Further downstream (S-319), aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards. Aquatic life uses are not supported at the next site downstream (S-013), due to elevated concentrations of zinc, including a very high value measured in 1988. Recreational uses are also not supported at this site due to fecal coliform bacteria excursions under Class FW standards.

At the fourth site downstream (S-018), aquatic life uses are not supported due to elevated concentrations of chromium and zinc, including a high chromium measurement in 1990, and a high zinc measurement in 1988. Bis(2-ethylhexyl)phthalate, used in vacuum pumps, exceeded the acute aquatic life criterion for water in 1988, and bromodichloromethane and dibromochloromethane (trihalomethanes) were detected in water in 1992, however neither exceeded aquatic life criteria. Anthracene, benzo(a)pyrene, chrysene, fluoranthene, naphthalene, pyrene, benzo(a)anthracene (all PAHs), and bis(2-ethylhexyl)phthalate have all been detected in sediment samples collected between 1989 and 1992. Very high concentrations of cadmium were measured in sediment at this site in 1988, and very high concentrations of cadmium,

chromium, copper, lead, mercury, and zinc were measured in the 1990 sediment sample. Turbidity and suspended solids showed significantly increasing trends. Recreational uses are not supported at S-018 due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform concentrations.

Aquatic life uses are only partially supported at the furthest site downstream (S-072), due to low dissolved oxygen concentrations; however, a significantly increasing trend in dissolved oxygen concentration and a significantly declining trend in five-day biochemical oxygen demand suggests improving conditions. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly increasing trend in pH was also evident at this site. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform concentrations.

Langston Creek - Aquatic life uses are not supported due to high concentrations of chromium measured in 1988-1990. A significantly increasing trend in pH may add to concerns at this site. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform concentrations.

Brushy Creek - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Rocky Creek - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Sanitary Bathing Areas

RECEIVING STREAM BATHING SITE

PERMIT # STATUS

SWAN LAKE
FURMAN UNIVERSITY LAKE

23-N04
ACTIVE

Point Source Contributions

The Reedy River is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated nutrient, turbidity, suspended solids, fecal coliform, toxics, and ammonia levels. The Reedy River is also included on the §304(l) long list of impacted waterbodies due to concerns for ambient toxicity and nontoxic pollutants. A permit driven TMDL was calculated for the Reedy River proposing a phosphorus limit of 1,400 lbs/month to be split between the WCRSA plants (Mauldin Road and Lower Reedy River). Brushy Creek, Langston Creek, and Rocky Creek are also included on the §303(d) high priority list of waters targeted for TMDL development. Brushy Creek's inclusion is related to its elevated nutrient, fecal coliform, and turbidity levels. Langston Creek is listed due to elevated fecal coliform and toxics, and Rocky Creek because of elevated fecal coliform, toxics, suspended solid, nutrient, and ammonia levels.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
REEDY RIVER JPS CONVERTER & INDUSTRIES PIPE #: 001 FLOW: ---- RECIRCULATING NON-CONTACT COOLING WATER	SC0002224 MINOR INDUSTRIAL EFFLUENT
REEDY RIVER WCRSA/LOWER REEDY RIVER PLT PIPE #: 001 FLOW: 5.000 WQL FOR NH3-N, DO, TRC	SC0024261 MAJOR MUNICIPAL WATER QUALITY
REEDY RIVER WR GRACE & CO./MADDEN-KER PIPE #: 001 FLOW: ---- MINE DEWATERING	SC0038741 MINOR INDUSTRIAL EFFLUENT
REEDY RIVER WCRSA/MAULDIN ROAD PLANT PIPE #: 001 FLOW: 29 WQL FOR NH3-N, DO, TRC, BOD5	SC0041211 MAJOR MUNICIPAL WATER QUALITY
REEDY RIVER CITY OF GREENVILLE/SERVICE CENTER PIPE #: 001 FLOW: M/R	SC0044431 MINOR INDUSTRIAL EFFLUENT
REEDY RIVER TRIB WCRSA/EAST GANTT ELEM SCHOOL PIPE #: 001 FLOW: 0.011 WQL FOR NH3-N, DO, TRC, BOD5	SC0024104 MINOR COMMUNITY WATER QUALITY
LITTLE CREEK ALTAMONT MOBILE HOME PIPE #: 001 FLOW: 0.0135 WQL FOR TRC	SC0028533 MINOR MUNICIPAL WATER QUALITY
RICHLAND CREEK METROMONT MATERIALS PIPE #: 001 FLOW: ----	SC0001287 MINOR INDUSTRIAL EFFLUENT
BRUSHY CREEK METROMONT MATERIALS PIPE #: 001 FLOW: M/R	SC0001295 MINOR INDUSTRIAL EFFLUENT
BRUSHY CREEK JPS CONVERTER & INDUSTRIES PIPE #: 001 FLOW: ----	SC0002232 MINOR INDUSTRIAL EFFLUENT
BRUSHY CREEK AMERADA HESS CORP. #40250 PIPE #: 001 FLOW: M/R WQL FOR TOXICS	SC0044245 MINOR INDUSTRIAL WATER QUALITY

BRUSHY CREEK TRIB JPS AUTOMOTIVE PRODUCTS PIPE #: 001 FLOW: M/R ONCE THROUGH NON-CONTACT COOLING WATER	SC0033456 MINOR INDUSTRIAL EFFLUENT
BRUSHY CREEK TRIB SOUTHERN WATER TREATMENTS PIPE #: 001 FLOW: M/R NON-CONTACT COOLING WATER	SC0045934 MINOR INDUSTRIAL EFFLUENT
COW CREEK MILLIKEN & CO./JUDSON PLT PIPE #: 001 FLOW: M/R NON-CONTACT COOLING WATER; AIRWASH WATER	SC0023418 MINOR INDUSTRIAL EFFLUENT
MARROW BONE CREEK CRUCIBLE CHEMICAL CO. PIPE #: 001 FLOW: M/R ONCE THROUGH NON-CONTACT COOLING WATER	SC0039829 MINOR INDUSTRIAL EFFLUENT
LAUREL CREEK JOHN D. HOLLINGSWORTH ON WHEELS PIPE #: 01S FLOW: -----	SC0033774 MINOR INDUSTRIAL EFFLUENT
LAUREL CREEK HOECHST CELANESE/GREENVILLE PIPE #: 001 FLOW: 0.018 WQL FOR NH3-N, DO	SC0002305 MINOR INDUSTRIAL WATER QUALITY

Nonpoint Source Contributions

Several streams in this watershed are included on the §319 list of waters impacted by agricultural activities and urban runoff. The Reedy River is listed as a watershed targeted for implementation action due to runoff from crop production and from urban surfaces and storm sewers. Information supplied by Department District Engineers, and water samples collected by the Department indicate elevated levels of fecal coliform and turbidity on numerous occasions and scattered elevated levels of toxic materials and pH. Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff for the Reedy River. The Reedy River and Rocky Creek are included on the §304(l) long list for waters impacted by nontoxic pollutants. Data received from outside agencies and water samples collected by the Department from both Rocky Creek and Brushy Creek indicate elevated fecal coliform levels on numerous occasions.

Laurel Creek and Richland Creek have been added to the §319 list due to ground water contaminated with toxic materials affecting their surface waters. Langston Creek is also being added to the list due to elevated levels of toxic materials (metals), fecal coliform, and pH.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
CITY OF GREENVILLE LANDFILL MUNICIPAL	DWP-070 ACTIVE

CITY OF SIMPSONVILLE LANDFILL #1
MUNICIPAL

CLOSED

CITY OF SIMPSONVILLE LANDFILL #2
MUNICIPAL

CLOSED

Ground Water Concerns

The ground water in the vicinity of the landfill owned by the Town of Simpsonville is contaminated with volatile organics and metals (Chromium and Zinc); a remedial investigation is pending. The surface water affected by the ground water contamination is an unnamed tributary to the Reedy River. The ground water in the vicinity of the surface impoundments owned by Evode Tanner is contaminated with volatile organics. The facility is in the assessment phase. The surface water affected by the ground water contamination is an unnamed tributary to Richland Creek.

The surface waters of Laurel Creek are affected by facility-related ground water contamination. Ground water in the vicinity of the surface impoundments owned by Chemurgy is contaminated with volatile organics, and the facility is in the remedial design phase. The ground water in the vicinity of the landfill and surface impoundments owned by Hoechst Celanese is contaminated with volatile and semi-volatile organics. The facility is in remediation, and the landfill and lagoon excavations are complete.

The ground water in the vicinity of the facility owned by American Fast Print/U.S. Finishing (formerly Cone Mills) is contaminated with chromium and petroleum products. The impact of the contamination is under assessment and a proposed upgrade to improve the recovery system is under review. The surface waters affected by the ground water contamination is Langston Creek.

Growth Potential

The City of Greenville is located in this watershed and has a high potential to continue as an urban growth area, particularly in the area south of the city. Both the I-85 and I-385 corridors are in this watershed and contribute greatly to the growth. There are a large number of existing industrial sites near the I-385 corridor, together with the Donaldson Industrial Air Park and several rail lines to encourage more industrial growth.

03050109-110

(Huff Creek)

General Description

Watershed 03050109-110 is located in Greenville County and consists primarily of **Huff Creek** and its tributaries. The watershed occupies 24,255 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Madison-Davidson-Cecil-Pacolet series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 7.38% urban land, 30.61% agricultural land, 23.02% scrub/shrub land, 1.47% barren land, 36.48% forested land, and 1.05% water.

Huff Creek accepts the drainage of Baker Creek and Little Creek before flowing into the Reedy River at the Town of Fork Shoals. There are a total of 50.0 stream miles in this watershed, all classified FW. Trollingwood Lake (32 acres), located on Baker Creek and is used for recreational purposes. There are also several small lakes (19-37 acres) in the watershed used for flood control.

Water Quality

Huff Creek - There are two SCDHEC monitoring sites along Huff Creek, and aquatic life uses are fully supported at both sites. Recreational uses are considered to be fully supported at the upstream site, despite fecal coliform bacteria excursions, due to the small number of samples. At the downstream site, recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
HUFF CREEK CROWN METRO INC. PIPE #: 001 FLOW: 0.16 WQL FOR NH3-N, DO, TRC, BOD5; COOLING WATER	SC0000663 MINOR INDUSTRIAL WATER QUALITY
HUFF CREEK WCRSA/IDLEWILD TRUST PIPE #: 001 FLOW: 0.070 WQL FOR NH3-N, TRC	SC0023973 MINOR MUNICIPAL WATER QUALITY
BAKER CREEK TROLLINGWOOD WWTP/CAROLINA WATER PIPE #: 001 FLOW: 0.02 WQL FOR TRC PROPOSED EXPANSION TO 0.1 MGD	SC0026611 MINOR MUNICIPAL WATER QUALITY
BAKER CREEK CANTERBURY SD PIPE #: 001 FLOW: 0.08 WQL FOR NH3-N, DO, TRC	SC0028941 MINOR MUNICIPAL WATER QUALITY

BAKER CREEK
SC DEPT CORR./PERRY CORR. INST.
PIPE #: 001 FLOW: 0.20
WQL FOR NH3-N, TRC
PROPOSED FOR ELIMINATION

SC0029343
MINOR MUNICIPAL
WATER QUALITY

Nonpoint Source Contributions

Huff Creek has been added to the §319 list due to elevated levels of fecal coliform bacteria measured in Department water samples.

Ground Water Concerns

The ground water in the vicinity of the surface impoundments owned by Crown Metro Inc. is contaminated with volatile organics; spills as well as impoundment leaks have occurred. The extent of ground water contamination is being assessed. The surface water affected by the ground water contamination is an unnamed tributary to Huff Creek.

Growth Potential

There is generally a low potential for development in this watershed. There are some industrial sites and land used for agricultural purposes. U.S. Highway 25 to the City of Greenville runs along the western edge of the watershed.

03050109-120

(*Reedy River*)

General Description

Watershed 03050109-120 is located in Greenville and Laurens Counties and consists primarily of the ***Reedy River*** and its tributaries from Huff Creek to Lake Greenwood. The watershed occupies 66,665 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Davidson-Pacolet-Wilkes series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 6.21% urban land, 12.64% agricultural land, 20.04% scrub/shrub land, 0.67% barren land, 59.39% forested land, and 1.05% water.

This section of the Reedy River accepts drainage from the upper Reedy River watershed (03050109-100), Martin Creek, and Horse Creek before flowing into and through Boyd Mill Pond. The river then accepts the drainage from Walnut Creek and forms an arm of Lake Greenwood. There are a total of 158.3 stream miles in this watershed, all classified FW.

Water Quality

Reedy River - There are two SCDHEC monitoring sites along this section of the Reedy River. Aquatic life uses are not supported at the upstream site based on macroinvertebrate community data, and may be threatened at the downstream site due to a very high concentration of zinc measured in 1992, which is compounded by a significantly declining trend in dissolved oxygen concentration. Recreational uses are fully supported at the downstream site, but a significantly increasing trend in fecal coliform bacteria concentration warrants attention.

Boyd Mill Pond - Categorized as a minor lake, Boyd Mill Pond has a watershed covering 627.8km². The pond has a surface area of 73.7 hectares, and a maximum and mean depth of 9.5m and 3.7m, respectively. A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in the lake system was nitrogen. Although improved, eutrophication studies classify the lake as a Category I for excessive nutrients and extremely high productivity; algal blooms have been documented. Aquatic life uses are considered to be fully supported. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities. Recreational uses are also fully supported.

Reedy River Arm of Lake Greenwood - The Algal Growth Potential Test for Lake Greenwood indicated that the limiting nutrient in the lake was nitrogen. Eutrophication studies classify the Reedy River Arm as Category I, described as having excessive nutrients and extremely high productivity. Aquatic life uses are considered to be fully supported. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities. Recreational uses are also fully supported.

Point Source Contributions

There are currently no point source dischargers in this watershed; however, it may be impacted by dischargers from the upper Reedy River watershed (03050109-100). The Reedy River is included on the §303(d) high priority list of waters targeted for TMDL development in relation to impacted macroinvertebrate communities and potential ammonia toxicity. Boyd Mill Pond together with the Reedy River arm of Lake Greenwood are included on the §303(d) low priority list of waters which may require development of a TMDL in relation to elevated nutrient levels.

Nonpoint Source Contributions

Mining Activities

MINING COMPANY

MINE NAME

PERMIT #

MINERAL

WR GRACE & CO.
MADDEN-KERNELLS MINE

0565-30
VERMICULITE

Growth Potential

There is a low potential for growth in this watershed. Some growth could result from the crossing of U.S. Highway 76 to the City of Laurens and from U.S. Highway 25 to the City of Greenville.

03050109-130

(Rabon Creek)

General Description

Watershed 03050109-130 is located in Greenville and Laurens Counties and consists primarily of **Rabon Creek** and its tributaries. The watershed occupies 88,094 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Davidson-Louisburg series. The erodibility of the soil (K) averages 0.22; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 6.13% urban land, 15.35 agricultural land, 22.52% scrub/shrub land, 0.99% barren land, 53.79% forested land, and 1.21% water.

There are a total of 178.0 stream miles in the Rabon Creek watershed, all classified FW. South Rabon Creek (Payne Branch, Bullit Branch) and North Rabon Creek (Stoddard Creek, Pumpkin Branch, Mountain Creek, Lick Creek) originate near the Town of Fountain Inn, and join together to form Lake Rabon near the City of Laurens. Rabon Creek (Dirty Creek, Burriss Creek) flows out of the Lake Rabon dam to form an arm of Lake Greenwood further downstream. There are also several small recreational lakes in this watershed.

Water Quality

Lake Rabon - Categorized as a minor lake, Lake Rabon has a watershed covering 229.9km². The lake has a surface area of 218.5 hectares, and a maximum and mean depth of 8.3m and 4.0m, respectively; thermal stratification occurs during the summer months. A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in the lake system was nitrogen. Eutrophication studies reclassified the improving lake from a Category II to a Category III for the lowest trophic condition; preservation is recommended. There are three SCDHEC monitoring sites along Lake Rabon. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities. Due to the natural conditions and to the small number of samples, aquatic life uses are considered to be fully supported at all sites. Recreational uses are also fully supported at all sites.

Rabon Creek - Aquatic life uses are fully supported based on macroinvertebrate community data, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Recreational uses are only partially supported due to elevated fecal coliform bacteria concentrations.

Rabon Creek Arm of Lake Greenwood - Eutrophication studies classify the Rabon Creek arm as Category II for an intermediate trophic condition, which could be susceptible to further degradation. The water quality trend data from 1980-1990 indicates that the Rabon Creek arm has improved from Category I to Category II. The Algal Growth Potential Test indicated that the limiting nutrient in Lake Greenwood was nitrogen. Aquatic life and recreational uses are fully supported in this portion of Lake Greenwood.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
CITY OF LAURENS CPW (M)	LAKE RABON	2.75
CITY OF LAURENS CPW (M)	RABON CREEK	0.00

Point Source Contributions

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
PAYNE BRANCH TRIB WOODSIDE MILLS/BEATTY PLT PIPE #: 001 FLOW: 0.01 WQL FOR NH3-N, TRC	SC0001601 MINOR INDUSTRIAL WATER QUALITY
STODDARD CREEK VAN DORN PLASTIC MACHINERY PIPE #: 001 FLOW: 0.0004 RECIRCULATING NON-CONTACT COOLING WATER	SC0038971 MINOR INDUSTRIAL EFFLUENT
STODDARD CREEK TRIB INTERLAKE PACKAGING PIPE #: 001 FLOW: ---- ONCE THROUGH NON-CONTACT COOLING WATER	SC0043214 MINOR INDUSTRIAL EFFLUENT
MOUNTAIN CREEK S & S WASHERETTE PIPE #: 001 FLOW: 0.006 WQL FOR NH3-N, TRC	SC0032298 MINOR INDUSTRIAL WATER QUALITY

Nonpoint Source Contributions

Rabon Creek is included on the §319 list of waters impacted by agricultural activities, and computer modelling indicates a high potential for NPS problems from agricultural activities. Water samples collected by the Department indicate elevated fecal coliform levels on numerous occasions. Rabon Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

There is an increasing potential for growth along the I-385 corridor in the eastern portion of this watershed near the greater Laurens area. Many residential subdivisions and industrial sites are currently under construction. Agricultural and silvicultural activities are prevalent in the western and central portion of the watershed. U.S. Highway 76 crosses Lake Rabon and the watershed en route to the City of Laurens.

03050109-140
(Ninety Six Creek)

General Description

Watershed 03050109-140 is located in Greenwood County and consists primarily of *Ninety Six Creek* and its tributaries. The watershed occupies 100,974 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet-Hiwassee series. The erodibility of the soil (K) averages 0.26; the slope of the terrain averages 10%, with a range of 2-40%. Land use/land cover in the watershed includes: 12.48% urban land, 11.37% agricultural land, 16.34% scrub/shrub land, 0.31% barren land, 59.26% forested land, and 0.25% water.

Rocky Creek (Turner Branch, Sample Branch) flows into Coronaca Creek near the Town of Coronaca, which in turn flows into Wilson Creek (Stockman Branch, Brightmans Creek) near the City of Greenwood. The Wilson Creek drainage flows into Ninety Six Creek, which drains into the Saluda River. Henley Creek accepts drainage from Ropers Creek, Marion Creek (Marion Branch), and Tolbert Branch before draining into Ninety Six Creek near the City of Greenwood and the Town of Ninety Six. There are several small lakes in the watershed used for recreation including Stratford Pond (30 acres), which drains into Henley Creek. Kate Fowler Branch flows into Ninety Six Creek downstream of Stratford Pond. Six Mile Creek and Conally Branch drain into the headwaters of Ninety Six Creek. There are a total of 158.3 stream miles in this watershed, all classified FW.

Water Quality

Ninety Six Creek - Aquatic life uses are fully supported, although a high concentration of nickel was measured in sediment in 1988. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions under Class FW standards. This creek was Class B until April, 1992, and bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed. Significantly increasing trends in dissolved oxygen and significantly decreasing trends in BOD₅ were noted, which suggests improving conditions. A significantly declining trend in pH was also noted.

Coronaca Creek - Aquatic life uses are not supported due to dissolved oxygen excursions; however, this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly declining trend in pH was also noted at this site. Recreational uses are fully supported.

Wilson Creek - There are two SCDHEC monitoring sites along Wilson Creek, which was Class B until April, 1992. Bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed. Significantly increasing trends in dissolved oxygen and significantly decreasing trends in BOD₅ were noted at both sites, which suggests improving conditions. Significantly declining trends in pH were also noted at both sites. Aquatic life uses are only partially supported at the upstream site due to dissolved oxygen excursions; however, this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A derivative of DDT

(P,P'DDT) was detected in sediment in 1992. Although the use of DDT was banned in 1973, it is very persistent in the environment. Also detected in the sediment, was a very high concentration of chromium in 1988, and a very high concentration of cadmium in 1992. Recreational uses are only partially supported at the upstream site due to fecal coliform bacteria excursions under Class FW standards; however, a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions.

Aquatic life uses are fully supported at the downstream site. Recreational uses are also only partially supported at the downstream site due to fecal coliform bacteria excursions under Class FW standards, but again a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
GREENWOOD MILLS, INC. (I)	BRIGHTMANS CREEK	0.325
GREENWOOD MILLS, INC. (I) -DURST PLANT	BRIGHTMANS CREEK	0.325
GREENWOOD MILLS, INC. (I) -MATTHEWS PLANT	BRIGHTMANS CREEK	0.325
GREENWOOD MILLS, INC. (I) -SLOAN PLANT	NINETY SIX CREEK	0.420
GREENWOOD MILLS, INC. (I) -ADAMS PLANT	NINETY SIX CREEK	0.420
GREENWOOD MILLS, INC. (I) -NINETY SIX PLANT	NINETY SIX CREEK	0.420

Point Source Contributions

Wilson Creek is included on the §304(l) long list of impacted waterbodies due to point source concerns for nontoxic and non-§307(a) toxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
NINETY SIX CREEK TOWN OF NINETY SIX PIPE #: 001 FLOW: 0.500 WQL FOR NH3-N, DO, TRC, BOD5	SC0036048 MINOR MUNICIPAL WATER QUALITY
CORONACA CREEK HIGHLAND MHP PIPE #: 001 FLOW: 0.005 WQL FOR NH3-N	SC0031933 MINOR COMMUNITY WATER QUALITY
CORONACA CREEK NORTHFALL ACRES SD PIPE #: 001 FLOW: 0.039 WQL FOR NH3-N, TRC	SC0032191 MINOR COMMUNITY WATER QUALITY
ROCKY CREEK CITY OF GREENWOOD/GRACE ST WTP PIPE #: 001 FLOW: M/R	SC0040991 MINOR INDUSTRIAL EFFLUENT

SAMPLE BRANCH PANTRY #340 PIPE #: 001 FLOW: M/R CONVERTED TO GENERAL PERMIT # SCG830012	SC0047015 MINOR INDUSTRIAL EFFLUENT
WILSON CREEK CITY OF GREENWOOD/WILSON CREEK PLANT PIPE #: 001 FLOW: 12.0 WQL FOR NH3-N, DO, TRC, BOD5	SC0021709 MAJOR MUNICIPAL WATER QUALITY
WILSON CREEK PIER 96 ENTERPRISES PIPE #: 001 FLOW: 0.06 WQL FOR TRC	SC0042706 MINOR COMMUNITY WATER QUALITY
BRIGHTMANS CREEK MITCHELL MHP PIPE #: 001 FLOW: 0.004 WQL FOR TRC	SC0026522 MINOR COMMUNITY WATER QUALITY
BRIGHTMANS CREEK GREENWOOD MILLS, INC./MATTHEWS PLT PIPE #: 002,003 FLOW:	SC0027260 MINOR INDUSTRIAL EFFLUENT
HENLEY CREEK EXXON CO. USA/SOUTH POINTE PIPE #: 001-- FLOW: ----- WQL FOR TOXICS	SC0041891 MINOR INDUSTRIAL WATER QUALITY
ROPER'S CREEK HIGHLAND FOREST SD PIPE #: 001 FLOW: 0.075 WQL FOR NH3-N, DO, TRC, BOD5	SC0034444 MINOR COMMUNITY WATER QUALITY
KATE FOWLER BRANCH GREENWOOD MILLS, INC./SLOAN PLANT PIPE #: 002 FLOW: -----	SC0027316 MINOR INDUSTRIAL EFFLUENT
KATE FOWLER BRANCH GREENWOOD MILLS, INC./ADAMS PLANT PIPE #: 001 FLOW: ----- NON-CONTACT COOLING WATER	SC0040584 MINOR INDUSTRIAL EFFLUENT

Growth Potential

There is a moderate potential for industrial growth in the Ninety Six-Greenwood area due to the infrastructure currently in place and the construction of the Fuji plant near the Town of Ninety Six. Continuing infrastructure development in this area has encouraged residential and commercial growth.

03050109-160

(Little River)

General Description

Watershed 03050109-160 is located in Laurens County and consists primarily of the ***Little River*** and its tributaries from its origin to the Laurens-Newberry County line. The watershed occupies 79,352 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Davidson series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 9.23% urban land, 12.03% agricultural land, 13.64% scrub/shrub land, 0.70% barren land, 64.19% forested land, and 0.21% water.

Reedy Fork Creek flows into the Little River in the City of Laurens, and Burnt Mill Creek (Scout Branch) enters the river further downstream. North Creek, Beaverdam Creek, and Simmons Creek drain into Little River near the base of the watershed. Several small lakes are located in the watershed for recreation, and a large pond (150 acres) is located on Beaverdam Creek for flood control. There are a total of 125.5 stream miles in this watershed, all classified FW.

Water Quality

Little River - There are three SCDHEC monitoring sites along this section of the Little River, which was Class B until April, 1992. Bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses are fully supported at the upstream site, although a significantly increasing trend in pH was noted. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards; however, a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions. At both the midstream and downstream sites, aquatic life uses are fully supported. Recreational uses are not supported at either site due to fecal coliform bacteria excursions under Class FW standards.

North Creek - Aquatic life uses are fully supported, although a significantly decreasing trend in pH was noted. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform bacteria concentrations.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
CITY OF LAURENS CPW (M)	REEDY FORK CREEK	0.00

Point Source Contributions

North Creek is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
LITTLE RIVER CITY OF LAURENS PIPE #: 001 FLOW: 4.500 WQL FOR NH3-N, DO, TRC, BOD5	SC0020702 MAJOR MUNICIPAL WATER QUALITY
LITTLE RIVER WR GRACE & CO./CRAIG MINE PIPE #: 001 FLOW: --- MINE DEWATERING	SC0041564 MINOR INDUSTRIAL EFFLUENT
LITTLE RIVER WR GRACE & CO./HUDGENS MINE PIPE #: 001 FLOW: --- MINE DEWATERING	SC0042269 MINOR INDUSTRIAL EFFLUENT
LITTLE RIVER LCWRC CLINTON/JOANNA PLANT PIPE #: 001 FLOW: 2.75 PROPOSED FACILITY; WQL FOR NH3-N, DO, TRC, BOD5	PROPOSED MAJOR MUNICIPAL WATER QUALITY
LITTLE RIVER LCWRC CLINTON/JOANNA PLANT PIPE #: 002 FLOW: 5.50 PROPOSED FACILITY; WQL FOR NH3-N, DO, TRC, BOD5	PROPOSED MAJOR MUNICIPAL WATER QUALITY
LITTLE RIVER TRIB JPS CONVERTER & INDUSTRIES PIPE #: 001 FLOW: .0003 NON-CONTACT COOLING WATER	SC0002208 MINOR INDUSTRIAL EFFLUENT
LITTLE RIVER TRIB JPS CONVERTER & INDUSTRIES PIPE #: 002 FLOW: 0.0003 NON-CONTACT COOLING WATER	SC0002208 MINOR INDUSTRIAL EFFLUENT
LITTLE RIVER TRIB WR GRACE & CO./HICKORY MINE PIPE #: 001 FLOW: --- MINE DEWATERING	SC0041530 MINOR INDUSTRIAL EFFLUENT
REEDY FORK CREEK CITY OF LAURENS/WTP PIPE #: 001 FLOW: 0.03 WQL FOR TRC	SC0041092 MINOR INDUSTRIAL WATER QUALITY
REEDY FORK CREEK BALL-INCON GLASS PACKING PIPE #: 001 FLOW: --- ONCE THROUGH NON-CONTACT COOLING WATER	SC0046205 MINOR INDUSTRIAL EFFLUENT
BURNT MILL CREEK H. LUREY & SONS, INC. PIPE #: 001 FLOW: ----	SC0041742 MINOR INDUSTRIAL EFFLUENT

SCRAPYARD STORMWATER RUNOFF

BURNT MILL CREEK
WR GRACE & CO./TRISTAN MILL
PIPE #: 001 FLOW: ---
MINE DEWATERING

SC0042285
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Contributions

The Little River is included on the §319 list of waters targeted for further evaluation due to agricultural activities. Water samples collected by the Department indicate elevated levels of fecal coliform on numerous occasions. Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff from this stream.

North Creek is also impacted by agricultural activities. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream. Water samples collected by the Department from North Creek indicate elevated fecal coliform levels on numerous occasions, together with scattered pH excursions. An unnamed tributary to Reedy Fork has been added to the §319 list due to ground water contaminated with toxic materials affecting the surface water.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
ALSIMAG (GE CERAMICS) INDUSTRIAL	----- CLOSED

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
WR GRACE & CO. BELLE CRAIG MINE	0677-30 VERMICULITE
WR GRACE & CO. HICKORY MINE	0715-30 VERMICULITE
WR GRACE & CO. LAURENS COUNTY PARK	0931-30 VERMICULITE
WR GRACE & CO. POWERS MINE	0836-30 VERMICULITE
WR GRACE & CO. IVEY MINE	0985-30 VERMICULITE
WR GRACE & CO. TRISTON MINE	0750-30 VERMICULITE
WR GRACE & CO. HUDGING MINE	0749-30 VERMICULITE
WR GRACE & CO.	0835-30

Ground Water Concerns

The ground water in the vicinity of the landfill and surface impoundments owned by Alsimag (GE Ceramics) is contaminated with volatile organics. The facility is in the assessment phase. The surface water affected by the ground water contamination is an unnamed tributary to Reedy Fork Creek.

Growth Potential

The City of Laurens is located in the northern portion of this watershed and has a high potential for growth. Factors that influence this growth include two major rail lines, U.S. Highway 221, U.S. Highway 76, and I-385. The Laurens County Industrial Park is a growth area in the predominately rural southern portion of the watershed.

03050109-163

(Little River)

General Description

Watershed 03050109-163 is located in Laurens and Newberry Counties and consists primarily of the *Little River* and its tributaries from the Laurens-Newberry County line to its confluence with the Saluda River. The watershed occupies 71,751 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Pacolet-Herndon-Cecil-Wilkes series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 0.75% urban land, 19.33% agricultural land, 17.46% scrub/shrub land, 0.16% barren land, 62.12% forested land, and 0.18% water.

This section of the Little River receives drainage from the upper Little River watershed (03050109-160), and together with its tributaries drains into the Saluda River near the Town of Silverstreet. Garrison Creek flows into the Little River near the top of the watershed. Further downstream, the Little River accepts drainage from Sandy Run Creek (Reeder Branch), Mechanic Creek, Mudlick Creek (Campbell Creek, North Campbell Creek, Mill Creek, Watkins Creek, Mills Creek, Pages Creek), Davenport Branch, and Stephens Creek. There are a total of 84.7 stream miles in this watershed, all classified FW.

Water Quality

Little River - There are two SCDHEC monitoring site along this section of the Little River. Aquatic life uses are fully supported at both sites. Significantly increasing trends in pH and turbidity were noted at the upstream site, most likely due to nonpoint source runoff. Recreational uses are not supported at the upstream site due to fecal coliform bacteria excursions under Class FW standards. Recreational life uses are considered to be fully supported at the downstream site, despite fecal coliform bacteria excursions, due to the small number of samples.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

This section of the Little River is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. The Little River is listed as waters impacted by agricultural activities, and computer modelling indicates a high potential for NPS problems from agricultural activities. Water samples collected by the Department indicate elevated levels of fecal coliform and turbidity on numerous occasions, together with scattered pH excursions. The Little River is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

CAROLINA VERMICULITE COMPANY, INC.
KENNETH HANNA MINE

0642-30
VERMICULITE

NEWBERRY COUNTY
FRANK SENN MINE

0600-36
SAND/CLAY

SOUTHERN BRICK COMPANY
SPIGNER MINE

0828-36
CLAY

Growth Potential

There is a low potential for growth in this rural watershed.

Description of Watersheds Within WMU-0202

Watershed Management Unit (WMU) 0202 encompasses 13 watersheds, some 1,700 square miles, that include the lower portion of the **Saluda River Basin** (973 square miles) and the **Congaree River Basin** (735 square miles). This area extends from the Piedmont region in the Saluda River Basin to the Sandhills and Upper Coastal Plain regions in the Congaree River Basin, and contains 1,887.2 stream miles. The 1,093,050 acres in this management unit is comprised of 11.0% urban land, 17.5% agricultural land, 4.1% scrub/shrub land, 0.2% barren land, 56.0% forested land, 5.2% forested wetland, 0.02% nonforested wetland, and 5.9% water (SCLRCC 1990). The Greater Columbia Metropolitan area is the predominant urban feature, which overlaps into both the Saluda and Congaree River Basins. The majority of agricultural land (71.6%) in the management unit area is located within the Saluda River Basin, chiefly in the headwaters region of Lake Murray. There are 56,600 acres of forested wetlands in WMU-0202, and 99.5% is located within the Congaree River Basin.

The portion of the Saluda River within WMU-0202 extends from Ninety Six Creek to its confluence with the Broad River in the City of Columbia. The Saluda River is joined by the Little Saluda River to form the headwaters of Lake Murray. The Little Saluda River accepts the Clouds Creek drainage before merging with the Saluda River. Hollow Creek also forms an arm in the upper lake region. Downstream from the Lake Murray dam, the lower Saluda River merges with the Broad River Basin to form the Congaree River, which flows for 50 miles before entering the Catawba-Santee Basin. Congaree Creek drains into the Congaree River near its headwaters followed by Gills Creek, Sandy Run, Cedar Creek, and Toms Creek.

Fish Consumption Advisory

A fish consumption advisory has been issued by SCDHEC for the Congaree River, Cary's Lake, Sesquicentennial Lake, Springwood Lake, and Windsor Lake advising people to limit the amount of Largemouth bass consumed from this river, these lakes, and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The acceptable amounts of Largemouth bass that can be consumed are as follows: **Congaree River** (Largemouth bass - 3.5 lbs./month); **Cary's Lake and Springwood Lake** (Largemouth bass - 3.25 lbs./month); **Sesquicentennial Lake** (Largemouth bass - 2.5 lbs./month); **Windsor Lake** (Largemouth bass - 2.75 lbs./month).

Climate

Data compiled from National Weather Service stations in Columbia at the Columbia Metropolitan Airport and the University of South Carolina, Little Mountain, and Newberry were used to determine the general climate information for the WMU-0202 area. Historical climatological records were compiled (SCWRC 1990) to provide the normal values. The normal annual rainfall in the area was 47.56 inches. The highest seasonal rainfall occurred in the summer due to thunderstorm activity with 13.90 inches; and 9.44, 11.67, and 12.55 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 63.3°F. On a seasonal basis, summer temperatures averaged 79.3°F and fall, winter, and

spring temperatures averaged 64.1, 46.4, and 63.3 °F, respectively. This is generally the warmest region in the State during the summer months.

Monitoring Station Descriptions in WMU-0202

03050109-150

(*Saluda River*)

General Description

Watershed 03050109-150 is located in Laurens, Newberry, Saluda, and Greenwood Counties and consists primarily of the ***Saluda River*** and its tributaries from the Lake Greenwood dam to the Lake Murray headwaters. The watershed occupies 168,229 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet-Wilkes-Herndon series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 15%, with a range of 2-45%. Land use/land cover in the watershed includes: 5.37% urban land, 22.97% agricultural land, 8.53% scrub/shrub land, 0.08% barren land, 61.37% forested land, 0.03% forested wetland (swamp), and 1.66% water.

This section of the Saluda River flows out of Lake Greenwood and is joined by Halfway Swamp (Thompsons Creek) and Sharps Branch near the Town of Chappells. Further downstream, Terrapin Creek and Mill Creek enter the river, followed by the Little River watershed (03050109-163), Rocky Branch, and Tosity Creek. Beaverdam Creek (Welch Creek) flows past the Town of Silverstreet and drains into the Saluda River arm of Lake Murray.

The Bush River originates near the City of Clinton where it accepts drainage from Shell Creek (Sand Creek). Further downstream, near the City of Newberry, Rocky Creek, Big Beaverdam Creek (Reedy Creek), and Scott Creek flow into the Bush River. The Bush River then accepts drainage from Timothy Creek (Kinards Creek, Dewalt Creek) near the Town of Prosperity and drains into the Saluda River arm of the lake. Big Creek enters the lake just downstream of the confluence of the Saluda and Bush Rivers. Several small lakes exist in the watershed for recreational and/or irrigational purposes. There are a total of 208.3 stream miles in this watershed, all classified FW. As a reach of the Saluda River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

Saluda River - There are three SCDHEC monitoring sites along this section of the Saluda River, and recreational uses are fully supported at all sites. Aquatic life uses are only partially supported at the upstream site due to dissolved oxygen excursions. This was compounded by a high concentration of copper measured in 1989 and a significantly decreasing trend in pH. Aquatic life uses are only partially supported at the midstream site due to dissolved oxygen excursions; however, a significantly increasing trend in dissolved oxygen concentration and a significantly declining trend in BOD₅ suggest improving conditions. A high concentration of copper was measured in 1989 at this site. Aquatic life uses are fully supported at the downstream site, although a high concentration of zinc was measured in 1992.

Saluda River Arm of Lake Murray - A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in Lake Murray was nitrogen. Eutrophication studies classify the Saluda River arm of the lake as Category I for excessive nutrients and extremely high productivity. Continued watershed management and in-lake restoration techniques for algae and macrophytes are

recommended. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities. Due to natural conditions and to the small number of samples, aquatic life uses are considered to be fully supported at all sites. Recreational uses are also fully supported.

Bush River - There are three SCDHEC monitoring sites along the Bush River, which was Class B until April, 1992. Bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses are fully supported at the upstream site, but may be threatened by a significantly declining trend in dissolved oxygen concentration and a significantly increasing trend in total nitrogen. Recreational uses are not supported at this site due to fecal coliform bacteria excursions under Class FW standards; however, a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions. Aquatic life uses are fully supported at the midstream and downstream sites, although a significantly increasing trend in pH was noted at the downstream site. Recreational uses are not supported at either the midstream or downstream sites due to fecal coliform bacteria excursions under Class FW standards.

Scott Creek - Aquatic life uses are fully supported, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Bush River Arm of Lake Murray - A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in Lake Murray was nitrogen. Eutrophication studies classify the Bush River arm of the lake as Category I for excessive nutrients and extremely high productivity. High algal concentrations may impair swimming usage of the Bush River arm of the lake. Continued watershed management and in lake restoration techniques for algae and macrophytes are recommended.

There are two SCDHEC monitoring sites in this portion of the lake, and recreational uses are fully supported at both sites. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities. Due to the small number of samples at the upstream site, aquatic life uses are considered to be fully supported. Aquatic life uses may be threatened at the downstream site due to a high concentration of zinc measured in 1990 and a very high concentration of zinc measured in 1991. Derivatives of DDT (P,P'DDT and P,P'DDE) were detected in sediment in 1988. Although the use of DDT was banned in 1973, it is very persistent in the environment. A significantly increasing trend in pH was also noted.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
CITY OF NEWBERRY (M)	SALUDA RIVER	3.36

Point Source Contributions

The Bush River arm of Lake Murray is included on the §303(d) low priority list of waters which may require TMDL development due to elevated nutrient levels. The Saluda River and Dewalt Creek are included

on the §304(l) long list of impacted waterbodies due to concerns for non-§307(a) toxic pollutants, and the Bush River is on the §304(l) long list due to concerns for nontoxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SALUDA RIVER CHAMPION INTL. CORP. PIPE #: 001 FLOW: 0.239 PROPOSED TEMPORARY DISCHARGE	SC0022730 MINOR INDUSTRIAL EFFLUENT
BUSH RIVER CITY OF CLINTON/GARY STREET PIPE #: 001 FLOW: VARIABLE WQL FOR TRC PROPOSED FOR EXPANSION TO 4.8 MGD	SC0021261 MINOR INDUSTRIAL WATER QUALITY
BUSH RIVER CITY OF NEWBERRY/BUSH RIVER PLANT PIPE #: 001 FLOW: 3.220 WQL FOR NH3-N, DO, TRC, BOD5	SC0024490 MAJOR MUNICIPAL WATER QUALITY
BUSH RIVER CITY OF NEWBERRY/BUSH RIVER PLANT PIPE #: 001 FLOW: 4.80 PROPOSED; WQL FOR NH3-N, DO, TRC, BOD5	SC0024490 MAJOR MUNICIPAL WATER QUALITY
BUSH RIVER LAURENS COUNTY WRC/CLINTON PIPE #: 001 FLOW: 2.750 WQL FOR NH3-N, DO, TRC	SC0037974 MAJOR MUNICIPAL WATER QUALITY
BUSH RIVER LAURENS COUNTY WRC/CLINTON PIPE #: 001 FLOW: 5.50 PROPOSED; WQL FOR NH3-N, DO, TRC	SC0037974 MAJOR MUNICIPAL WATER QUALITY
BUSH RIVER NEWBERRY COUNTY W&S PLT #1 PIPE #: 001 FLOW: 0.5 WQL FOR NH3-N, DO, TRC, BOD5	SC0040860 MINOR MUNICIPAL WATER QUALITY
BUSH RIVER TRIB CLINTON MILLS/LYDIA PLANT PIPE #: 001 FLOW: 0.022 NON-CONTACT COOLING WATER; AIRWASH WATER	SC0003719 MINOR INDUSTRIAL EFFLUENT
BUSH RIVER TRIB FEDERAL PAPER BOARD PIPE #: 001 FLOW: 0.019 ONCE THROUGH NON-CONTACT COOLING WATER	SC0036064 MINOR INDUSTRIAL EFFLUENT
SHELL CREEK DENNISON PSC PIPE #: 001 FLOW: .0008	SC0039314 MINOR INDUSTRIAL EFFLUENT

NON-CONTACT COOLING WATER

Nonpoint Source Contributions

The Saluda River and the Bush River are both included on the §319 list of waters impacted by agricultural activities; computer modelling indicates a high potential for NPS problems from agricultural activities for both of these streams. Water samples collected from the Saluda River by Department personnel indicate scattered elevated levels of toxic materials (metals). Data received from outside agencies and water samples collected by the Department from the Bush River indicate elevated levels of total nitrogen on numerous occasions, and scattered dissolved oxygen excursions.

Scott Creek is included on the §319 list of waters impacted by urban runoff. Water samples collected by the Department indicate elevated fecal coliform levels on numerous occasions, and scattered DO excursions. Scott Creek is also included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Scott Creek is included on the §304(l) long list for waters impacted by nontoxic pollutants.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
NEWBERRY CITY LANDFILL	DWP-023
DOMESTIC	CLOSED

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
SOUTHERN BRICK COMPANY	0277-24
HICKS MINE	SHALE
SOUTHERN BRICK COMPANY	0155-41
BAUKNIGHT MINE	SHALE

Growth Potential

U.S. Highway 76 and a rail line run along the eastern watershed border from the Town of Prosperity to the City of Clinton, including the City of Newberry. The only area in this predominately rural watershed with sewer and water services is the City of Newberry, which discharges its wastewater to the Bush River. Assimilative capacity of the Bush River is limited and may affect the growth in this region. Another future growth area predicted for the watershed, in terms of residential growth, is the Saluda Arm of Lake Murray.

03050109-170
(Little Saluda River)

General Description

Watershed 03050109-170 is located in Saluda County and consists primarily of the ***Little Saluda River*** and its tributaries. The watershed occupies 151,080 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Herndon-Tatum-Helena-Georgeville series. The erodibility of the soil (K) averages 0.43, the highest in the Saluda-Edisto Basin; the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 1.11% urban land, 33.75% agricultural land, 4.23% scrub/shrub land, 0.04% barren land, 59.42% forested land, 0.02% forested wetland (swamp), and 1.43% water.

The Little Saluda River is formed by the confluence of Mine Creek (Little Mine Creek, Dry Creek) and Red Bank Creek (Penn Creek, Salem Branch) and flows through the Saluda Reservoir near the Town of Saluda. Further downstream, the Little Saluda River is joined by Canebrake Branch, Burnets Creek, and Richland Creek (Poplar Branch, Corley Branch). Big Creek (Dry Creek, Shiloh Branch, Persimmon Creek, Watermelon Branch) joins the Little Saluda River to form an arm of upper Lake Murray. The Town of Saluda has several lakes along Red Bank Creek and upper region of the Little Saluda River for water supply and municipal purposes. Indian Creek and Dailey Creek flow into the Little Saluda River arm of Lake Murray forming small coves. There are a total of 219.2 stream miles in this watershed, all classified FW.

Water Quality

Little Saluda River - There are two SCDHEC monitoring sites along the Little Saluda River, which was Class B until April, 1992. Bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed. Aquatic life uses are not supported at the upstream site due to dissolved oxygen excursions; however, this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly decreasing trend in pH was noted at this site. Toxaphene, a pesticide, was detected in sediment in 1989, and a very high concentration of cadmium was measured in 1992. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards, however a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions. Aquatic life uses are only partially supported at the downstream site due to dissolved oxygen excursions, together with a significantly decreasing trend in pH. A high concentration of copper was measured in water in 1989. Recreational uses are not supported at this site due to fecal coliform bacteria excursions under Class FW standards.

Little Saluda River Arm of Lake Murray - A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in Lake Murray was nitrogen. Eutrophication studies reclassified the Little Saluda River arm of the lake from Category I to Category II, for an intermediate trophic condition, which may be susceptible to further degradation. Aquatic life and recreational uses are fully supported in this

portion of the lake. Although pH excursions occurred, elevated pH levels occur naturally in lakes with significant phytoplankton communities, and do not represent standards contraventions.

Point Source Contributions

Mine Creek is included on the §304(l) long list for waters impacted by point source nontoxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
LITTLE SALUDA RIVER TOWN OF SALUDA/LITTLE SALUDA PLT PIPE #: 001 FLOW: 0.465 WQL FOR NH3-N, DO, TRC, BOD5	SC0022381 MINOR INDUSTRIAL WATER QUALITY
LITTLE SALUDA RIVER MILLIKEN & CO./SALUDA PLANT PIPE #: 001 FLOW: 0.05 RECIRCULATING NON-CONTACT COOLING WATER	SC0023396 MINOR INDUSTRIAL EFFLUENT
MINE CREEK GENTRY POULTRY CO. PIPE #: 001 FLOW: 0.04 WQL FOR NH3-N, DO, TRC, BOD5	SC0029122 MINOR INDUSTRIAL WATER QUALITY
DRY CREEK GENTRY POULTRY CO. PIPE #: 001A FLOW: 0.024 WQL FOR NH3-N, DO, TRC, BOD5	SC0029122 MINOR INDUSTRIAL WATER QUALITY

Nonpoint Source Contributions

The Little Saluda River is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department indicate scattered elevated levels of toxic materials (metals, pesticides) and pH. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream. The Little Saluda River is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
SALUDA COUNTY NO.2, HWY 178	0960-41 SAND/CLAY

Growth Potential

Growth for the Town of Saluda, found in the center of this watershed, is limited due to water and sewer constraints. If Saluda County can connect to the pending Horse Creek Valley System, future growth

would be more likely. U.S. Highways 178 and 378 run through the watershed, and together with existing industry may encourage growth in this area.

03050109-180

(Clouds Creek)

General Description

Watershed 03050109-180 is located in Saluda and Lexington Counties and consists primarily of *Clouds Creek* and its tributaries. The watershed occupies 67,616 acres of the Piedmont and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Appling-Herndon-Tatum-Lakeland-Helena series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 4.11% urban land, 26.43% agricultural land, 4.57% scrub/shrub land, 0.26% barren land, 63.19% forested land, 0.29% forested wetland (swamp), and 1.15% water.

The Clouds Creek watershed originates near the Town of Ridge Spring, and encompasses a total of 155.5 stream miles before entering the Little Saluda River. Clouds Creek is joined by Peters Creek and Indian Creek before flowing through Asbill Pond. Downstream of the pond, Clouds Creek accepts the drainage of Jacobs Branch, Moores Creek (Dye Creek), Harris Branch, Warren Branch, Mack Branch, Flat Rock Branch, and Long Branch. West Creek originates near the Town of Batesburg, and accepts the drainage of Bates Branch, Gin Branch, and Lick Creek before entering Clouds Creek at the base of the watershed. Clapboard Branch and Beaverdam Creek enter Clouds Creek just it drains into the Little Saluda River. There are several small ponds in the watershed that are used for recreation and/or irrigation.

Water Quality

Clouds Creek - There are two SCDHEC monitoring sites along Clouds Creek. Aquatic life uses are fully supported at the upstream site, however a significantly decreasing trend in pH was noted. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards. Aquatic life and recreational uses are fully supported at the downstream site.

Moores Creek - Aquatic life uses are fully supported based on macroinvertebrate community data.

Point Source Contributions

Clouds Creek is included on the Section 303(d) low priority list of waters that may require development of a TMDL in relation to elevated turbidity and suspended solids.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
HARRIS BRANCH AMICKS POULTRY FARMS PIPE #: 001 FLOW: 0.5 WQL FOR NH3-N, DO, TRC, BOD5	SC0025585 MINOR INDUSTRIAL WATER QUALITY
WEST CREEK TRIB	SC0039187

HERMITAGE INDUSTRIES
PIPE #: 001 FLOW: 0.04
COOLING WATER

MINOR INDUSTRIAL
EFFLUENT

GIN BRANCH
COLUMBIA FARMS, INC.
PIPE #: 001 FLOW: ----
ONCE THROUGH NON-CONTACT COOLING WATER

SC0041599
MINOR INDUSTRIAL
EFFLUENT

GIN BRANCH
PONDEROSA COUNTRY CLUB
PIPE #: 001 FLOW: 0.0053
WQL FOR NH3-N, DO, TRC, BOD5

SC0045306
MINOR COMMUNITY
WATER QUALITY

Nonpoint Source Contributions

Clouds Creek is included on the §319 list of waters impacted by agricultural activities, and is also included on the list of watersheds targeted for implementation action due to elevated levels of fecal coliform on numerous occasions.

Growth Potential

The Towns of Batesburg, Leesville, and Monetta lie along the southern edge of this predominately rural watershed. A rail line and U.S. Highway 1 connect these towns and U.S. Highway 178 bisects the watershed. There is a low to moderate potential for some residential and industrial growth. The majority of the area does not have water or sewer available; however, plans to increase capacity by running a new water line along U.S. Highway 1 from the Town of Lexington area are being discussed.

03050109-190

(*Saluda River*)

General Description

Watershed 03050109-190 is located in Newberry, Saluda, Lexington, and Richland Counties and consists primarily of the *Saluda River* and its tributaries from the Lake Murray headwaters to the dam. The watershed occupies 160,460 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Tatum-Georgeville-Herndon-Lakeland series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 3.49% urban land, 13.20% agricultural land, 1.27% scrub/shrub land, 0.12% barren land, 53.52% forested land, 0.01% forested wetland (swamp), and 28.39% water.

The Saluda River watershed (03050109-150) and the Little Saluda River watershed (03050109-170) merge to form the headwaters of Lake Murray. Spring Creek, Hawleek Creek, Rocky Creek (Whetstone Creek), and Buffalo Creek flow into the waters of upper Lake Murray. Camping Creek (Susannah Branch, Snap Branch), Stevens Creek (Millers Branch), and Bear Creek (Rocky Branch, Stinking Creek) enter midlake on the northern shore, and the Hollow Creek watershed (03050109-200), Horse Creek (Little Horse Creek), Little Hollow Creek, Beaverdam Creek, Rocky Creek (Clemons Branch), Beech Creek, and Twentymile Creek enter midlake on the southern shore of the lake. Eighteenmile Creek drains into the lake near the dam. Lake Murray is owned and operated by SCE&G Company and is used for power production, recreation, and water supply. There are also several small ponds (10-18 acres) in the watershed used for recreation. Billy Dreher State Park, located midlake on Billy Dreher Island is another natural resource in the watershed. There are a total of 82.6 stream miles (tributaries) in this watershed, and Lake Murray extends over 51,000 acres.

Water Quality

Lake Murray - Categorized as a major lake, Lake Murray has a watershed covering 3059.6 km² and a surface area of 20,639.4 hectares. The lake undergoes thermal stratification during the summer months, and has maximum and mean depths of 57.8m and 12.6m, respectively. A single Algal Growth Potential Test, conducted in the summer of 1989, indicated that the limiting nutrient in the lake system was nitrogen. Eutrophication studies reclassified the lake headwaters from Category I to Category II, for an intermediate trophic condition, which may be susceptible to further degradation. The dam area is classified as a Category III for the lowest trophic condition and is recommended for preservation. Treatment for *Hydrilla* in selected areas of Lake Murray began in 1993 by the Water Resources Division of the SCDNR to provide public access in the following areas: the public ramp at the dam, the SCE&G beach at the dam, Snelgrove's Landing, Putnam's Landing, Shull Island Ramps A and B, Turner's Landing, The Village Cove, and Pine Island. A total of 84 acres were treated in the midlake and lower lake areas. Herbicide treatment in selected areas of Lake Murray for *Hydrilla* was continued in 1994.

There are eight SCDHEC monitoring sites within the main body of Lake Murray. Excursions of pH occurred at most sites; however, higher pH levels occur naturally in lakes with significant phytoplankton

communities and do not represent standards violations. Aquatic life uses are fully supported in the Rocky Creek arm (S-279), although significantly increasing trends in BOD₅ and pH were noted. A high concentration of zinc was measured at this site in 1991, and a derivative of DDT (P,P'DDE) was detected in sediment in 1992. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported at this site, but a significantly increasing trend in fecal coliform bacteria concentrations warrants attention. Aquatic life and recreational uses are fully supported in the Buffalo Creek arm (S-211), a cove west of Billy Dreher Island (S-212), and the Camping Creek arm (S-213). A significantly increasing trend in pH was noted at both S-212 and S-213. Recreational uses are fully supported at the open water station offshore of Billy Dreher Island (S-280), the open water site near the dam (S-273), the cove near Susie Ebert Island (S-274), and at the dam (S-204), but significantly increasing trends in fecal coliform bacteria concentrations at all four sites warrant attention. Significantly increasing trends in pH were also noted at all four sites.

Aquatic life uses are fully supported at S-280; however, a high concentration of chromium was measured in 1988 sediment samples and a very high concentration of chromium was measured in 1990. Aquatic life uses are also fully supported at S-273, although a high concentration of zinc was measured in water in 1989, and a high concentration of chromium was measured in sediment in 1992. Aquatic life uses are fully supported at S-274; however, a high concentration of zinc was measured in 1992, and sediment samples revealed a derivative of DDT in 1992 and a very high concentration of mercury in 1989. Aquatic life uses may be threatened at the dam (S-204) due to the high concentrations of zinc measured in 1988 and 1989. Derivatives of DDT (P,P'DDD and P,P'DDE) were detected in sediment in 1988, together with a high concentration of chromium detected in 1988 and a very high concentration of chromium in 1990.

Camping Creek - Aquatic life uses are fully supported, however a significantly increasing trend in pH was noted. Recreational uses are not supported due to fecal coliform bacteria excursions. This stream was Class B until April, 1992, and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed.

Sanitary Bathing Areas

RECREATIONAL STREAM BATHING SITE

PERMIT # STATUS

LAKE MURRAY
DREHER ISLAND STATE PARK

36-N07
ACTIVE

Water Supply

WATER USER (TYPE)
CITY OF COLUMBIA (M)
CITY OF WEST COLUMBIA (M)

STREAM
LAKE MURRAY
LAKE MURRAY

AMOUNT WITHDRAWN (MGD)
1.88
1.47

Point Source Contributions

Camping Creek is included on the Section 303(d) low priority list of waters which may require TMDL development in relation to fecal coliform, traces of toxic materials, potential ammonia toxicity, and dissolved oxygen concerns. Camping Creek is also included on the §304(l) long list of impacted waterbodies due to concerns for nontoxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
LAKE MURRAY SCDPRT/DREHER ISLAND PIPE #: 001 FLOW: 0.06 WQL FOR NH3-N, DO, BOD5	SC0026948 MINOR COMMUNITY WATER QUALITY
LAKE MURRAY TRIB ROLLINGWOOD SD/CAROLINA WATER PIPE #: 001 FLOW: 0.044 WQL FOR NH3-N, DO, TRC, BOD5	SC0022845 MINOR COMMUNITY WATER QUALITY
CAMPING CREEK GA PACIFIC/PROSPERITY PIPE #: 001 FLOW: --- BOILER BLOWDOWN, SOFTENER BACKWASH	SC0022641 MINOR INDUSTRIAL EFFLUENT
CAMPING CREEK NEWBERRY COUNTY/PLANT 2 PIPE #: 001 FLOW: 0.03 WQL FOR NH3-N, DO, TRC, BOD5	SC0044741 MINOR MUNICIPAL WATER QUALITY
STEVENS CREEK MII-DERA GARDEN APTS PIPE #: 001 FLOW: 0.0144 WQL FOR NH3-N, DO, TRC	SC0032042 MINOR COMMUNITY WATER QUALITY
<i>LAND APPLICATION FACILITY NAME</i>	<i>PERMIT # TYPE</i>
SPRAY IRRIGATION BEDFORD WAY/NCW&SA	ND0062219 MINOR MUNICIPAL
TILE FIELD MALLARD BAY SD/AAA UTIL.	ND0019640 MINOR COMMUNITY
LOW PRESSURE IRRIGATION SYSTEM SMALL WOODS SD/CAROLINA WATER	ND0007994 MINOR COMMUNITY

Nonpoint Source Contributions

The Lake Murray headwaters and Camping Creek are both included on the §319 list of waters impacted by agricultural activities, and both are included on the §304(l) long list for waters impacted by nontoxic pollutants. Data received from outside agencies and water samples collected by the Department from the headwaters of Lake Murray indicate numerous dissolved oxygen excursions, and scattered elevated

levels of fecal coliform and toxic materials (metals). There are also scattered excursions of pH and BOD₅. Computer modelling indicates a high potential for NPS problems from agricultural activities for the headwaters area.

Water samples collected by the Department from Camping Creek indicate elevated levels of fecal coliform on numerous occasions. Camping Creek is also included on the §319 list of watersheds targeted for Implementation Action (the ongoing project is described below).

Camping Creek Watershed Study

A comprehensive watershed project funded under §319 is currently underway involving Camping Creek. The objective of the project is to encourage farmers in the watershed to implement BMPs on row-crop land and on land used for intensive livestock operations. Components of the project include technology transfer, innovative BMP demonstrations, education, and effectiveness monitoring.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

H. ANDERSON JR CONSTRUCTION CO.
SUMMIT SAND PIT

0235-32
SAND

Growth Potential

The area surrounding Lake Murray is developing at a rapid pace. The widening of U.S. Highway 378 to four lanes will increase the expansion rate along the Lexington side of the lake. U.S. Highway 76 runs along the opposite shoreline of the lake, as does a rail line. The widening of I-26 toward the Chapin\Pomaria Exit is encouraging growth on both sides of the interstate.

Residential development continues to grow within the lake region. The area around the dam is the most developed and has water and sewer. The Richland County portion of the lake is also well developed and has several residential subdivisions where water and sewer are available, and is continuing to develop. Extension of sewer along the northern shoreline is likely in the next five to ten years. The area surrounding the Town of Chapin is moderately developed with residential subdivisions that include Kensington Plantation and golf course. The City of Columbia has recently extended water to serve the Town of Chapin and has made water available to Kensington Plantation and other subdivisions in the area. Several small privately and publicly owned sewer systems serving separate residential areas need to be tied together.

The upper lake region in Newberry County is primarily rural: a few small subdivisions, some industry, and agricultural activities on a small scale. The Town of Prosperity has community water and sewer service provided by Newberry County Water and Sewer Authority, which allows slow but steady growth in the area. A water treatment plant is proposed to draw water from this upper region of Lake Murray, and sewer service is to be expanded beyond Plantation Pointe. The industries in the region provide their own wastewater treatment. The expanded water services and access to the interstate should encourage growth in this area.

The Lexington County side (southern shoreline) of the lake is rural with patches of residential and commercial development. Agricultural activities in the upper lake region, primarily livestock and orchards, constitute a large portion of the landuse. Extension of water up U.S. Highway 378 from the City of West Columbia/Lexington County's 6.0 million gallon water plant is currently in the discussion stage. The plant is located on Lake Murray and takes raw water from the lake. A sewer force main has recently been built along Highway 378 from the Town of Saluda's traffic circle to the Town of Lexington. A special tax district to cover the expense of further sewer installation around the lake shoreline is being discussed.

Lake Murray, as the main water-based recreational resource in the region, draws millions of visitors annually to its numerous parks, recreational areas, and waterways. All aspects of growth surrounding Lake Murray (tourist industry, residential development, agricultural activities) are expected to continue.

03050109-200
(Hollow Creek)

General Description

Watershed 03050109-200 is located in Lexington County and consists primarily of **Hollow Creek** and its tributaries. The watershed occupies 13,139 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Appling-Lakeland-Tatum-Georgeville series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 6.56% urban land, 24.49% agricultural land, 2.82% scrub/shrub land, 0.14% barren land, 63.27% forested land, and 2.72% water.

Hollow Creek accepts drainage from Caney Branch and Little Creek before draining into the middle region of Lake Murray. There are a total of 19.2 stream miles in this watershed, all classified FW. There are also several small recreation ponds in the watershed.

Water Quality

Hollow Creek - Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Hollow Creek is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Hollow Creek is also included on the §319 list due to elevated levels of fecal coliform.

Growth Potential

There is a low potential for growth in this watershed.

03050109-210

(*Saluda River*)

General Description

Watershed 03050109-210 is located in Lexington and Richland Counties and consists primarily of the *Saluda River* and its tributaries from the Lake Murray dam to its confluence with the Broad River. The watershed occupies 62,048 acres of the Piedmont and Sandhill regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Tatum-Georgeville-Appling series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 49.54% urban land, 7.94% agricultural land, 2.15% scrub/shrub land, 0.26% barren land, 37.65% forested land, 0.02% forested wetland (swamp), and 2.43% water.

This section of the Saluda River flows out of the Lake Murray dam and merges downstream with the Broad River to form the Congaree River in the City of Columbia. The lower Saluda River is protected under the S.C. Scenic Rivers Act. Rawls Creek (Yost Creek, Koon Branch), Lorick Branch, and Kinley Creek drain into the Saluda River near the City of Irmo. Juniper Creek and Long Creek (Pine Branch, Hamburg Branch) join to form Twelvemile Creek near the Town of Gilbert. Twelvemile Creek accepts drainage from Hogpen Branch, Fall Branch, and Boggy Branch before flowing through the Town of Lexington to accept the drainage of Fourteenmile Creek (Long Branch) and enter the river. Some of the ponds encountered by Twelvemile Creek include: Barr Lake, Gibsons Pond, Lexington Mill Pond, and Corley Mill Pond. Barr Lake (57 acres) is managed by the Lexington Wildlife Department and Lexington Mill Pond (32 acres) is used for water supply. Stoop Creek, Senn Branch, and Double Branch enter the Saluda River just prior to its confluence with the Broad River. There are a total of 129.0 stream miles in this watershed, all classified FW.

Water Quality

Saluda River - There are three SCDHEC monitoring sites along this section of the Saluda River. Aquatic life uses are not supported at the upstream site (below the dam) due to dissolved oxygen excursions, compounded by a significantly declining trend in dissolved oxygen concentration. This is at least partly due to the release of waters low in dissolved oxygen from the bottom of Lake Murray. This is also a secondary monitoring station, so sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. Recreational uses are fully supported at this site. Aquatic life uses are not supported at the midstream site (downstream of Rawls Creek and Lorick Branch) due to dissolved oxygen excursions, again compounded by a significantly declining trend in dissolved oxygen concentration. This site is also a secondary monitoring station, and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. Recreational uses are also fully supported at this site.

Aquatic life uses may be threatened at the downstream site (downstream of Twelvemile and Kinley Creeks) due to a very high concentration of zinc measured in 1991, which is compounded by a significantly increasing trend in BOD₅. Recreational uses are only partially supported due to elevated concentrations of fecal coliform bacteria.

Rawls Creek - Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Lorick Branch - Aquatic life uses are fully supported, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Twelvemile Creek - Aquatic life uses may be threatened due to extremely high concentrations of zinc measured in 1988 and 1991, and a very high concentration of copper measured in 1988. Carolina Steel and Wire upgraded to a recirculating system in 1991 thus eliminating their discharge from the creek. In 1992, zinc and copper did not exceed aquatic life acute criteria. A significantly decreasing trend in pH was also noted at this site. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards.

Kinley Creek - Aquatic life uses are fully supported; however, a significantly increasing trend in pH was noted together with a high concentration of zinc in 1988 water samples. Sediment samples revealed the presence of chlordane (a pesticide) and a very high concentration of zinc in 1988. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
TOWN OF LEXINGTON (M)	TWELVEMILE CREEK	1.303
CITY OF WEST COLUMBIA (M)	SALUDA RIVER	2.460
PHILIPS COMPONENTS (I)	SALUDA RIVER	7.500
ALLIED FIBERS CORP. (I)	SALUDA RIVER	38.020

Point Source Contributions

The lower Saluda River is listed on the §303(d) low priority list due to dissolved oxygen concerns. A permit driven TMDL was calculated for the lower Saluda River proposing an Ultimate Oxygen Demand (UOD) of 3,900 lbs/day. The Central Midlands 208 Areawide Water Quality Management Plan (1993) was amended to state that all the existing non-industrial dischargers to the lower Saluda River (Twelvemile and Fourteenmile Creek basins) will be consolidated into a regional sewer system in accordance with existing or modified permit requirements, with treatment at the City of Cayce's wastewater treatment plant. It was also stated that dischargers can increase their flow but not their loading (treatment must improve with increased flow), and that no reallocation of loading to other dischargers can occur if a discharge is removed from the river.

Rawls Creek, Lorick Branch, and Kinley Creek are included on the Section 303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Kinley Creek also has elevated levels of suspended solids. Twelvemile Creek is included on the §304(l) short list for waters not expected to meet applicable water quality standards after full implementation of NPDES permit conditions due, in part or entirely, to point source discharges of §307(a) toxics; Carolina Steel and Wire was

the facility discharging the toxic effluent (Copper, Lead, Nickel, Thallium, Antimony, and Zinc). Twelvemile Creek is also included on the §304(l) long list for impacted waterbodies due to concerns for ambient toxicity. A tributary to Twelvemile Creek is included on the §304(l) long list for non-§307(a) toxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SALUDA RIVER SCE&G/MCMEEKIN STEAM STATION PIPE #: 001 FLOW: M/R	SC0002046 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/MCMEEKIN STEAM STATION PIPE #: 002 FLOW: M/R	SC0002046 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/SALUDA HYDRO STATION PIPE #: 1A-D FLOW: 0.11 ONCE THROUGH NON-CONTACT COOLING WATER	SC0002071 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/SALUDA HYDRO STATION PIPE #: 002 FLOW: 0.42	SC0002071 MAJOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/SALUDA HYDRO STATION PIPE #: 003 FLOW: 0.0364	SC0002071 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/SALUDA HYDRO STATION PIPE #: 004 FLOW: 0.0364	SC0002071 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER SCE&G/SALUDA HYDRO STATION PIPE #: 005 FLOW: 0.294	SC0002071 MINOR INDUSTRIAL EFFLUENT
SALUDA RIVER ALLIED FIBERS CORP./COLUMBIA PLANT PIPE #: 001 FLOW: 0.537 WQL FOR DO	SC0003557 MAJOR INDUSTRIAL WATER QUALITY
SALUDA RIVER PHILIPS COMPONENTS PIPE #: 001 FLOW: 0.715 WQL FOR DO	SC0003425 MAJOR INDUSTRIAL WATER QUALITY
SALUDA RIVER WOODLAND HILLS SD PIPE #: 001 FLOW: 0.29 WQL FOR DO	SC0029475 MINOR COMMUNITY WATER QUALITY
SALUDA RIVER BUSH RIVER UTIL., INC. PIPE #: 001 FLOW: 0.4 WQL FOR DO	SC0032743 MINOR COMMUNITY WATER QUALITY

SALUDA RIVER I-20 REGIONAL SEWER SYSTEM PIPE #: 001 FLOW: 0.8 WQL FOR DO PROPOSED FOR EXPANSION TO 1.0 MGD	SC0035564 MINOR COMMUNITY WATER QUALITY
SALUDA RIVER FRIARSGATE SD/RAWLS CREEK PIPE #: 001 FLOW: 1.2 WQL FOR DO	SC0036137 MAJOR MUNICIPAL WATER QUALITY
SALUDA RIVER RIVERBANKS ZOOLOGICAL PARK PIPE #: 001 FLOW: 0.781 WQL FOR DO	SC0037613 MINOR INDUSTRIAL WATER QUALITY
SALUDA RIVER FORMER TENNECO #6033 PIPE #: 001 FLOW: M/R WQL FOR TOXICS	SC0045535 MINOR INDUSTRIAL WATER QUALITY
SALUDA RIVER TRIB EMRO MKTG #62 PIPE #: 001 FLOW: ---- STORMWATER	SC0040321 MINOR INDUSTRIAL EFFLUENT
LORICK BRANCH PHILIPS COMPONENTS PIPE #: 002 FLOW: ---- NON-CONTACT COOLING WATER	SC0003425 MAJOR INDUSTRIAL EFFLUENT
TWELVEMILE CREEK TOWN OF LEXINGTON/COVENTRY WOODS PIPE #: 001 FLOW: 1.95 WQL FOR NH3-N, DO, TRC	SC0026735 MAJOR MUNICIPAL WATER QUALITY
TWELVEMILE CREEK VICTORIAN LAKES ESTATES PIPE #: 001 FLOW: 0.07 WQL FOR NH3-N, DO, TRC	SC0034932 MINOR COMMUNITY WATER QUALITY
TWELVEMILE CREEK FAST FARE #SC-616 PIPE #: 001 FLOW: 0.008 WQL FOR BOD5, TOXICS	SC0045586 MINOR INDUSTRIAL WATER QUALITY
TWELVEMILE CREEK OAK GROVE ESTATES PIPE #: 001 FLOW: 0.045 WQL FOR NH3-N, DO, TRC, BOD5	SC0031201 MINOR MUNICIPAL WATER QUALITY
TWELVEMILE CREEK TRIB OAK GROVE ELEMENTARY PIPE #: 001 FLOW: 0.02 WQL FOR NH3-N, DO, TRC, BOD5	SC0026018 MINOR COMMUNITY WATER QUALITY
TWELVEMILE CREEK TRIB CAROLINA STEEL & WIRE PIPE #: 001 FLOW: MR	SC0026239 MINOR INDUSTRIAL WATER QUALITY

WQL FOR BOD5

TWELVEMILE CREEK TRIB
VANARSDALE SD/MIDLANDS
PIPE #: 001 FLOW: 0.1512
WQL FOR NH3-N, DO, TRC, BOD5

SC0030945
MINOR COMMUNITY
WATER QUALITY

TWELVEMILE CREEK TRIB
SUN MACHINERY
PIPE #: 001 FLOW: -----
WQL FOR BOD5

SC0046221
MINOR INDUSTRIAL
WATER QUALITY

FOURTEENMILE CREEK
WATERGATE DEV./CAROLINA WATER
PIPE #: 001 FLOW: 0.25
WQL FOR NH3-N, DO, TRC, BOD5
PROPOSED EXPANSION TO 0.55 MGD

SC0027162
MINOR MUNICIPAL
WATER QUALITY

FOURTEENMILE CREEK
LAKEWOOD UTILITIES
PIPE #: 001 FLOW: 0.2
WQL FOR NH3-N, DO, TRC, BOD5
TO BE ELIMINATED

SC0034436
MINOR COMMUNITY
WATER QUALITY

FOURTEENMILE CREEK
CITY OF WEST COLUMBIA/WHITEFORD
PIPE #: 001 FLOW: 0.3
WQL FOR NH3-N, DO, TRC, BOD5
TO BE ELIMINATED

SC0043541
MINOR MUNICIPAL
WATER QUALITY

STOOP CREEK
ALPINE UTILITIES, INC.
PIPE #: 001 FLOW: 2.0
WQL FOR NH3-N, DO, TRC

SC0029483
MINOR COMMUNITY
WATER QUALITY

DOUBLE BRANCH
KEENAN OIL CO./PHILLIPS 66
PIPE #: 001 FLOW: M/R
WQL FOR BOD5, TOXICS

SC0041998
MINOR INDUSTRIAL
WATER QUALITY

DOUBLE BRANCH
SCE&G/HOLLAND STREET
PIPE #: 001 FLOW: M/R
WQL FOR BOD5

SC0044296
MINOR INDUSTRIAL
WATER QUALITY

**LAND APPLICATION
FACILITY NAME**

**PERMIT#
TYPE**

SPRAY IRRIGATION
GILBERT ELEMENTARY SCHOOL

ND0013587
MINOR COMMUNITY

SPRAY IRRIGATION
LEXINGTON HIGH SCH./VOC.ED.CTR.

ND0067016
MINOR COMMUNITY

SPRAY IRRIGATION
WINDY HILL SD

ND0067075
MINOR COMMUNITY

Nonpoint Source Contributions

The Saluda River is included on the §319 list of watersheds targeted for implementation action due to agricultural activities and urban runoff. Data received from outside agencies and water samples collected by the Department indicate scattered BOD5 excursions and elevated toxic materials (metals). Rawls Creek and Lorick Branch are both impacted by urban runoff. Water samples collected by the Department from Rawls Creek indicate elevated levels of fecal coliform on numerous occasions. Water samples from Lorick Branch indicate elevated levels of fecal coliform and dissolved oxygen excursions on numerous occasions. Kinley Creek is impacted by agricultural and construction activities and urban runoff due to elevated levels of fecal coliform, toxic materials (metals and pesticides), and pH. The Saluda River, Rawls Creek, Lorick Branch, and Kinley Creek are all included on the §304(l) long list for waters impacted by nontoxic pollutants.

Kinley Creek Watershed Project

A §319 Implementation Project was conducted for Kinley Creek to provide a comprehensive assessment of basinwide stormwater management practices. Resolving flooding and sedimentation problems associated with stormwater runoff from developed areas was the primary objective of the project. A GIS (Geographical Information System) was used to identify flood prone areas and to assess stormwater impact to the area. Data layers included topography, watershed boundaries, land use, and soil type. Channel erosion due to the lack of erosion and sediment control practices appears to be the major contributor to the sedimentation problem. Future development will be able to use tools developed for this project to reduce the effects of stormwater runoff in the Kinley Creek drainage area.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
SCE&G McMEEKIN STATION INDUSTRIAL	IWP-220 ACTIVE
ALLIED COMPANY INDUSTRIAL	IWP-143 ACTIVE
MUSTARD COLEMAN CONSTRUCTION INDUSTRIAL	NWP-001 ACTIVE

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
GUIGNARD BRICK WORKS, INC. CORLEY MILL ROAD	0028-32 SHALE

Growth Potential

There is a high potential for future residential and industrial development in this watershed. The area surrounding the Town of Lexington has grown rapidly during the past several years and the trend should continue. Several important highways run through the area including: S.C. Highway 6, which runs from the Lake Murray dam south through the Town of Lexington, and U.S. Highways 1 and 378, which run west from the City of West Columbia and intersects with Highway 6 in Lexington; I-20 also serves the area. The watershed's industrial corridor is one of the most economically attractive in the Midlands Area for future development. Once sewer is readily available, residential development is expected to increase and large industrial prospects can be attracted to the area.

The recent construction of a water plant on the shore of Lake Murray north of the Town of Lexington, has made available a water supply sufficient to support development. The City of West Columbia and Lexington County have extended major water mains in the area. The Lexington County Joint Municipal Water and Sewer Commission has recently been established by Lexington County, West Columbia, and several small towns, to participate in a new regional sewer plan to serve this watershed. When implemented, the plan will tie together several small plants that include the Town of Lexington's wastewater treatment plant and a privately owned discharger to the lower Saluda River. The flow will be transported by force main to the City of Cayce treatment plant, which discharges into the Congaree River watershed (03050110-010). This watershed has a high potential for water quality problems due to future development plans along the I-20/U.S. Highway 1 corridor, which could affect Twelvemile Creek, Fourteenmile Creek, and the lower Saluda River.

03050110-010

(*Congaree River*)

General Description

Watershed 03050110-010 is located in Richland, Lexington, and Calhoun Counties and consists primarily of the *Congaree River* and its tributaries from its origin to Cedar Creek. The watershed occupies 141,781 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Chewacla-Congaree-Blaney-Fuquay series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 10.03% urban land, 9.33% agricultural land, 2.49% scrub/shrub land, 0.27% barren land, 56.31% forested land, 17.86% forested wetland (swamp), and 3.71% water.

The Congaree River originates with the confluence of the Saluda River Basin and the Broad River Basin in the City of Columbia. There are a total of 290.0 stream miles in this watershed, all classified FW. Rocky Branch flows into the Congaree River within the City of Columbia, followed by the Congaree Creek watershed (03050110-020) and the Gills Creek watershed (03050110-030). Further downstream, Toms Branch (Silver Lake, Geiger Pond), Big Lake (Cow Cut), and Savany Hunt Creek enter the river. The river then accepts drainage from the Sandy Run watershed (03050110-040) and Mill Creek (Reeder Point Branch, Black Lake, Adams Pond, Pinewood Lake, Ulmers Pond, Sun View Lake, Twin Lakes). Big Beaver Creek accepts drainage from Rock Branch, Branham Branch, Little Beaver Creek (Howell Branch, Falls Branch), and Congaree Spring Branch (Hildebrand Branch) before flowing into the Congaree River. Butlers Gut Creek connects Big Beaver Creek to Buyck Bottom Creek (Sikes Creek) and to the river. Bates Mill Creek (High Hill Creek, Speigner Branch, Dicks Swamp) drains into the river at the base of the watershed. There are numerous recreational lakes and river oxbows in this watershed such as Saylor's Lake and Dead River. Another natural resource in the watershed is the Congaree River Swamp National Monument, a wetland preserve, which extends along the northeastern river bank in the lower portion of the watershed.

Water Quality

Congaree River - There are four SCDHEC monitoring sites along this section of the Congaree River. The two upstream sites are located immediately downstream of the Saluda River and Broad River confluence, where the waters are not yet evenly mixed. One site is near the west bank and represents Saluda River waters (CSB-001L), and the other site is near the east bank and reflects the incoming Broad River waters (CSB-001R). Aquatic life uses are fully supported at the Saluda River side, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Di-n-butylphthalate was detected in a 1990 sediment sample, and benzo(b)fluoranthene, fluoranthene, pyrene (all PAHs), and PCB 1254 were detected in a 1992 sediment sample. A high concentration of zinc was measured in both water and sediment in 1988. Recreational uses are fully supported for this site.

Aquatic life uses are also fully supported for the Broad River side, but again may be threatened by a significantly declining trend in dissolved oxygen concentration. In 1988, toluene was detected in a water sample, and chlordane was detected in sediment. In the 1990 sediment sample, acenaphthene, anthracene,

benzo(a)pyrene, chrysene, fluorene, benzo(a)anthracene (all PAHs), and di-n-butylphthalate were detected. Fluoranthene and pyrene (PAHs) were detected in both the 1988 and 1990 sediment samples. The detection of organics at both sites is probably a result of nonpoint source runoff from the Columbia metropolitan area. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions under Class FW standards; however, a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions.

Aquatic life uses are fully supported at the two downstream sites (C-007E and C-007H). Although there were fecal coliform bacteria excursions at both sites, due to the small number of samples, recreational uses are considered to be fully supported.

Mill Creek - There are two SCDHEC monitoring sites along Mill Creek. Excursions of pH occurred at both sites, however they are consistent with swamp-influenced waters seen in this region of the state, and as such are considered natural conditions, not standards violations. Aquatic life uses are fully supported at the upstream site, but may be threatened by a significantly declining trend in dissolved oxygen concentration and a significantly increasing trend in turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significantly increasing trend in fecal coliform bacteria concentration.

At the downstream site, aquatic life uses are only partially supported due to dissolved oxygen excursions. This is a secondary monitoring station, and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly increasing trend in turbidity was also evident at this site. Recreational uses are only partially supported due to elevated fecal coliform bacteria concentrations. The increases in turbidity and fecal coliform are most likely due to nonpoint source runoff.

Sanitary Bathing Areas

<i>RECREATIONAL STREAM BATHING SITE</i>	<i>PERMIT # STATUS</i>
SILVER LAKE	32-N09
SILVER LAKE	ACTIVE
HIGH HILL CREEK	09-N03
LEES POND	ACTIVE

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
CAROLINA EASTMAN CO. (I)	CONGAREE RIVER	181.440

Point Source Contributions

Mill Creek is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. A TMDL (total maximum daily load) was calculated for the Congaree River for ammonia toxicity due to its large size and close proximity of the dischargers. The TMDL for NH₃-N is 8963 lbs/day.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
CONGAREE RIVER MARTIN MARIETTA AGGREGATES/CAYCE QRY PIPE #: ---- FLOW: ---- QUARRY DEWATERING	SC0001058 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER CAROLINA EASTMAN CO. PIPE #: 001 FLOW: 100.82 COOLING WATER	SC0001333 MAJOR INDUSTRIAL EFFLUENT
CONGAREE RIVER WESTINGHOUSE ELECTRIC CORP. PIPE #: 001 FLOW: 0.128	SC0001848 MAJOR INDUSTRIAL EFFLUENT
CONGAREE RIVER SCE&G/COLUMBIA HYDRO PLANT PIPE #: 001 FLOW: .0058 ONCE THROUGH NON-CONTACT COOLING WATER	SC0002062 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER CITY OF COLUMBIA/METRO PLANT PIPE #: 001 FLOW: 60.00 WQL FOR NH3-N, DO, TRC	SC0020940 MAJOR MUNICIPAL WATER QUALITY
CONGAREE RIVER CITY OF CAYCE/MAIN PLT PIPE #: 001 FLOW: 8.000 WQL FOR NH3-N, DO, TRC	SC0024147 MAJOR MUNICIPAL WATER QUALITY
CONGAREE RIVER TEEPAK INC./CORIA DIV. PIPE #: 001 FLOW: .378	SC0033367 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER EAST RICHLAND COUNTY PSD/GILLS CK PLT PIPE #: 001 FLOW: 10.5 WQL FOR NH3-N, DO, TRC	SC0038865 MAJOR MUNICIPAL WATER QUALITY
CONGAREE RIVER CITY OF WEST COLUMBIA/WATER PLANT PIPE #: 001 FLOW: ---- FILTER BACKWASH	SC0041076 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER SC DEPT. AGRIC./METEOROLOGICAL STATION PIPE #: 001 FLOW: ----	SC0041386 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER ATLANTIC SOFT DRINK PIPE #: 001 FLOW: ---- ONCE THROUGH NON-CONTACT COOLING WATER	SC0043125 MINOR INDUSTRIAL EFFLUENT

CONGAREE RIVER SCE&G/COIT GAS TURBINE PIPE #: 001 FLOW: ----	SC0044814 MINOR INDUSTRIAL EFFLUENT
CONGAREE RIVER TRIB CHEVRON USA, INC./CAYCE PIPE #: 001 FLOW: ---- WQL FOR BOD5, TOXICS	SC0042455 MINOR INDUSTRIAL WATER QUALITY
CONGAREE RIVER TRIB AMERADA HESS CORP. #40234 PIPE #: 001 FLOW: .0072 WQL FOR BOD5, TOXICS	SC0044946 MINOR INDUSTRIAL WATER QUALITY
CONGAREE RIVER TRIB AMERADA HESS CORP. #40237 PIPE #: 001 FLOW: .0072 WQL FOR BOD5, TOXICS	SC0044971 MINOR INDUSTRIAL WATER QUALITY
CONGAREE RIVER TRIB YOUNG'S FOOD STORE PIPE #: 001 FLOW: .0004 WQL FOR BOD5, TOXICS	SC0045705 MINOR INDUSTRIAL WATER QUALITY
ROCKY BRANCH TARMAC MID-ATLANTIC PIPE #: 001 FLOW: ----	SC0002364 MINOR INDUSTRIAL EFFLUENT
ROCKY BRANCH TARMAC MID-ATLANTIC PIPE #: 002 FLOW: ---- MINE DEWATERING	SC0002364 MINOR INDUSTRIAL EFFLUENT
ROCKY BRANCH TRIB EMRO MKTG/FACILITY #289 PIPE #: 001 FLOW: .0144 WQL FOR BOD5, TOXICS	SC0045128 MINOR INDUSTRIAL WATER QUALITY
TOMS BRANCH SILVER LAKE MHP PIPE #: 001 FLOW: 0.038	SC0031321 MINOR COMMUNITY EFFLUENT
TOMS BRANCH ROLLING MEADOWS MHP PIPE #: 001 FLOW: 0.0715 WQL FOR NH3-N	SC0033685 MINOR COMMUNITY WATER QUALITY
SAVANY HUNT CREEK SC HWY DEPT/I-26 REST AREA PIPE #: 001 FLOW: 0.06	SC0040339 MINOR COMMUNITY EFFLUENT
MILL CREEK CHARLES TOWNE SD/UTILITY PIPE #: 001 FLOW: 0.166 WQL FOR NH3-N, DO, TRC, BOD5 TO BE ELIMINATED	SC0032760 MINOR COMMUNITY WATER QUALITY
REEDER POINT BRANCH STARLITE SD/TERRACEWAY	SC0030911 MINOR COMMUNITY

PIPE #: 001 FLOW: 0.8
WQL FOR NH3-N, DO, TRC
TO BE ELIMINATED

WATER QUALITY

REEDER POINT BRANCH
SC TRACTOR & EQUIPMENT
PIPE #: 001 FLOW: ----

SC0038024
MINOR INDUSTRIAL
EFFLUENT

***LAND APPLICATION
FACILITY NAME***

***PERMIT #
TYPE***

SLUDGE INJECTION
LAND & LAB TECH., INC.

ND0069761
MINOR COMMUNITY

Nonpoint Source Contributions

The Congaree River is included on the §319 list of waters impacted by urban runoff. Data received from outside agencies and water samples collected by the Department indicate elevated levels of fecal coliform on numerous occasions, together with scattered elevated levels of toxic materials (metals, organics) and DO excursions. Water samples collected from Mill Creek by the Department indicate elevated fecal coliform levels on numerous occasions, together with scattered elevated turbidity levels and DO excursions. Mill Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants. An unnamed tributary to Mill Creek was added to the §319 list due to ground water contamination by toxic materials affecting the surface waters.

Landfill Activities

***SOLID WASTE LANDFILL NAME
FACILITY TYPE***

***PERMIT #
STATUS***

FORT JACKSON
MUNICIPAL

DWP-098
ACTIVE

SOUTHEASTERN CONCRETE
INDUSTRIAL

NWP-005
ACTIVE

Mining Activities

***MINING COMPANY
MINE NAME***

***PERMIT #
MINERAL***

LANIER CONSTRUCTION CO., INC.
LANIER ASPHALT PLANT

0124-32
SAND

TARMAC CAROLINAS, INC.
COLUMBIA QUARRY

0133-40
GRANITE

MARTIN MARIETTA AGGREGATES
CAYCE QUARRY

0102-32
GRANITE

GUIGNARD BRICK WORKS, INC.
ROOF MINE

0422-09
KAOLIN

Ground Water Concerns

The ground water in the vicinity of the spray irrigation field and surface impoundments owned by Carolina Eastman Co. is contaminated with nitrates and other substances. The facility is in the monitoring and assessment phase for both nitrate and dewatering contamination; an application is being made for a mixing zone. The surface water affected by the ground water contamination is the Congaree River. Also affecting the Congaree River is the ground water in the vicinity of the surface impoundments owned by Teepak, which is also contaminated with nitrates. The facility is currently in the assessment phase.

The ground water in the vicinity of the property owned by Westinghouse Nuclear Fuel Division is contaminated with nitrates, fluoride, and volatile organics from spills and leaks. The facility is currently in the monitoring and assessment phase. The surface waters affected by the ground water contamination are Sun View Lake and the unnamed tributaries and wetlands draining into Mill Creek.

Growth Potential

There is a low to moderate potential for residential and industrial growth in the Olympia area of the City of Columbia together with a section of the downtown area. The Olympia and Bluff Road areas contain heavy industrial development. Only the upper portion of the watershed, near the City of Columbia, has available water and sewer service. The Cities of West Columbia and Cayce are also located in this watershed. There are plans to extend water and sewer facilities capable of handling industrial development within the next five to ten years. The area around Silver Lake is expected to undergo substantial residential and industrial development. The area south of the City of Cayce, along I-26 and U.S. Highway 321, and the Bluff Road/Shop Road area in Columbia are expected to experience heavy growth. The area along U.S. Highways 176 and 21 should experience moderate growth, primarily industrial.

03050110-020

(*Congaree Creek*)

General Description

Watershed 03050110-020 is located in Lexington County and consists primarily of *Congaree Creek* and its tributaries. The watershed occupies 100,935 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Blaney-Fuquay series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 5%, with a range of 2-15%. Land use/land cover in the watershed includes: 30.63% urban land, 8.17% agricultural land, 5.88% scrub/shrub land, 0.31% barren land, 52.44% forested land, 1.03% forested wetland (swamp), and 1.54% water.

The Congaree Creek watershed drains into the Congaree River near the City of Cayce. West Fork and East Fork join to form Scrouter Branch, which flows through Redmond Pond and Shealy Pond to enter Congaree Creek near its origin. Congaree Creek then flows through Hunt Pond before accepting the drainage from Red Bank Creek (Turkey Creek, Crystal Lake, Lick Fork Branch, Pole Branch). Second Creek (Hunt Branch, Bear Creek, Reedy Branch) flows into First Creek, which in turn drains into Congaree Creek. Congaree Creek also accepts the drainage from Savana Branch (Pitts Lake), Sixmile Creek (Lake Caroline), and Dry Creek. There are a total of 189.2 stream miles in this watershed, all classified FW, together with numerous recreational ponds. Due to the absence of point source dischargers and the presence of endangered species, Scrouter Branch together with Redmond Pond and Shealy Pond may qualify as potential ORW candidates. Another natural resource in the watershed is the Peachtree Rock Nature Preserve, located at the headwaters of Hunt Branch.

Water Quality

Congaree Creek - There are two SCDHEC monitoring sites along Congaree Creek. Excursions of pH occurred at both sites; however, they are consistent with the swamp-influenced waters seen in this region of the State, and are considered natural conditions, not standards violations. Aquatic life uses may be threatened at the upstream site due to a very high concentration of zinc measured in 1990, compounded by significantly increasing trends in pH and turbidity. The turbidity is most likely due to nonpoint source runoff. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards, compounded by a significantly increasing trend in fecal coliform concentration.

Aquatic life and recreational uses are fully supported at the downstream site, despite fecal coliform bacteria excursions, due to the small number of samples. This creek was Class B until April, 1992 and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed.

Red Bank Creek - There are two SCDHEC monitoring sites along Red Bank Creek, and aquatic life and recreational uses are fully supported at both sites. Excursions of pH occurred at both sites; however, they are consistent with the swamp-influenced waters seen in this region of the State, and are considered natural conditions, not standards violations. Significantly increasing trends in turbidity were noted at both sites,

together with a significantly increasing trend in pH at the upstream site. The turbidity is most likely a result of nonpoint source runoff.

Savana Branch - Aquatic life uses are fully supported; however, significantly increasing trends in pH and turbidity were noted. The pH excursions are consistent with the swamp-influenced waters seen in this region of the State, and as such are considered natural conditions, not standards violations. The turbidity is most likely a result of nonpoint source runoff. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significantly increasing trend in the concentration of fecal coliform bacteria.

Sixmile Creek - Aquatic life uses are only partially supported due to dissolved oxygen excursions; however, this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly increasing trend in turbidity was noted at this site, most likely due to nonpoint source runoff. Recreational uses are fully supported.

Lake Caroline - Aquatic life uses are fully supported; however, significantly increasing trends in pH and turbidity were noted. Turbidity is most likely a result of nonpoint source runoff. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions under Class FW standards; however, a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions.

Sanitary Bathing Areas

<i>RECREATIONAL STREAM BATHING SITE</i>	<i>PERMIT # STATUS</i>
FIRST CREEK CAMP BARSTOW	32-N01 ACTIVE
RED BANK CREEK TRIB YMCA CAMP	32-N10 ACTIVE
SCROUTER CREEK CONGAREE GIRL SCOUT CAMP	32-N05 ACTIVE

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
CITY OF CAYCE (M)	CONGAREE CREEK	2.200
US SILICA/PENN GLASS SAND(I)	FIRST CREEK	1.440
US SILICA/PENN GLASS SAND(I)	SECOND CREEK	9.500
US SILICA/PENN GLASS SAND(I)	SECOND CREEK	0.720
US SILICA/PENN GLASS SAND(I)	SECOND CREEK	0.940

Point Source Contributions

Red Bank Creek is included on the §304(l) long list for waters impacted by nontoxic pollutants.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
CONGAREE CREEK CREEKSIDE MHP PIPE #: 001 FLOW: 0.0387	SC0031143 MINOR COMMUNITY EFFLUENT
CONGAREE CREEK PINE RIDGE MIDDLE SCHOOL PIPE #: 001 FLOW: 0.0375 WQL FOR NH3-N, DO, TRC, BOD5	SC0033430 MINOR COMMUNITY WATER QUALITY
RED BANK CREEK TOWN OF LEXINGTON/OLD BARNWELL PIPE #: 001 FLOW: 0.8 WQL FOR NH3-N, TRC	SC0023680 MINOR MUNICIPAL WATER QUALITY
RED BANK CREEK TOWN OF LEXINGTON/TWO NOTCH ROAD PIPE #: 001 FLOW: 0.4 WQL FOR NH3-N, TRC	SC0040789 MINOR MUNICIPAL WATER QUALITY
FIRST CREEK GLENN VILLAGE/CAROLINA WATER PIPE #: 001 FLOW: 0.1284 WQL FOR NH3-N, DO, TRC, BOD5	SC0030651 MINOR COMMUNITY WATER QUALITY
BEAR CREEK LEXINGTON COUNTY/EDMUND PIPE #: 001 FLOW: 0.0554 WQL FOR NH3-N, TRC, BOD5	SC0045110 MINOR INDUSTRIAL WATER QUALITY
SAVANA BRANCH LOXCREEN COMPANY PIPE #: 001 FLOW: 0.0045 WQL FOR NH3-N	SC0003174 MINOR INDUSTRIAL WATER QUALITY
SIXMILE CREEK SOUTHERN PLASTICS CO. PIPE #: 001 FLOW: 0.182 ONCE THROUGH NON-CONTACT COOLING WATER	SC0001881 MINOR INDUSTRIAL EFFLUENT
SIXMILE CREEK SOLAR FARMS PIPE #: 001 FLOW: 0.026 WQL FOR TRC	SC0039021 MINOR INDUSTRIAL WATER QUALITY
SIXMILE CREEK S.C. FIRE ACADEMY PIPE #: 002 FLOW: 0.108 AIR STRIPPER EFFLUENT	SC0039225 MINOR INDUSTRIAL EFFLUENT
SIXMILE CREEK CITY OF CAYCE/WATER PLANT PIPE #: 001 FLOW: 0.14 FILTER BACKWASH; WQL FOR TRC	SC0040924 MINOR INDUSTRIAL WATER QUALITY

SIXMILE CREEK RACETRAC SERVICE STATION PIPE #: 001 FLOW: 0.0432 WQL FOR BOD5, TOXICS	SC0044326 MINOR INDUSTRIAL WATER QUALITY
SIXMILE CREEK COLUMBIA METROPOLITAN AIRPORT PIPE #: 001 FLOW: 0.00864 STORMWATER RUNOFF	SC0044342 MINOR INDUSTRIAL EFFLUENT
SIXMILE CREEK AMOCO SERVICE STATION PIPE #: 001 FLOW: 0.0144 WQL FOR BOD5, TOXICS	SC0044393 MINOR INDUSTRIAL WATER QUALITY
SIXMILE CREEK PARKWOOD MHP PIPE #: 001 FLOW: .035 WQL FOR NH3-N, DO, TRC, BOD5	SC0030473 MINOR COMMUNITY WATER QUALITY
DRY CREEK BROOKFOREST MH EST. PIPE #: 001 FLOW: 0.027 WQL FOR TRC	SC0031178 MINOR COMMUNITY WATER QUALITY
DRY CREEK TRIB BELLE MEADE SD/MIDLANDS UTILITIES PIPE #: 001 FLOW: 0.08 WQL FOR NH3-N, DO, TRC	SC0030988 MINOR COMMUNITY WATER QUALITY
DRY CREEK TRIB LLOYDWOOD SD/CAROLINA WATER PIPE #: 001 FLOW: 0.1548 WQL FOR NH3-N, TRC	SC0031402 MINOR COMMUNITY WATER QUALITY

Nonpoint Source Contributions

Red Bank Creek is included on the §319 list of waters impacted by agricultural and resource extraction activities; computer modelling indicates a high potential for NPS problems from agricultural and surface mining activities. Data received from outside agencies and water samples collected by the Department indicate elevated turbidity levels and pH excursions on numerous occasions. Savana Branch is impacted by urban runoff, and water samples collected by the Department indicate elevated fecal coliform and turbidity levels on numerous occasions. Red Bank Creek and Savana Branch are both included on the §304(l) long list for waters impacted by nontoxic pollutants.

Lake Caroline and Sixmile Creek have both been added to the §319 list. Lake Caroline has elevated fecal coliform and turbidity levels, and Sixmile Creek has elevated turbidity and scattered DO excursions.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
LEXINGTON COUNTY LANDFILL DOMESTIC	DWP-127 ACTIVE

LEXINGTON COUNTY LANDFILL (321 SITE)
DOMESTIC

DWP-030
CLOSED

U.S. #1 FLEA MARKET
INDUSTRIAL

NWP-003
ACTIVE

Mining Activities

***MINING COMPANY
MINE NAME***

***PERMIT #
MINERAL***

BOWERS LEASING
BOWERS MINE

0637-32
SAND

RICHTEX CORPORATION
SOX MINE

0184-32
KAOLIN

CAROLINA MATERIALS CORPORATION
I-20 PIT

0787-32
SAND

B&T SAND COMPANY, INC.
BLED SOE MINE

0947-32
SAND

CAROLINA MATERIALS CORPORATION
RED BANK PIT

0608-32
SAND/CLAY

B&T SAND COMPANY, INC.
HWY 6 MINE

0741-32
SAND

LEXINGTON COUNTY
RED BANK PIT

0505-32
SAND/CLAY

LA BARRIER & SON, INC.
EDMUND MINE

0958-32
SAND

JC TINDAL SAND COMPANY
TINDAL MINE

0535-32
SAND

US SILICA
COLUMBIA MINE

0150-32
SAND

COLUMBIA SILICA SAND COMPANY, INC.
SHULER MINE #2

0010-32
SAND

LANIER CONSTRUCTION CO., INC.
STROUD PIT

0946-32
SAND

NW WHITE & COMPANY
DUNBAR ROAD MINE

0696-32
SAND

NW WHITE & COMPANY
OVERLAND DRIVE MINE

0697-32
SAND

COLUMBIA SILICA SAND COMPANY, INC.
TRUCK PIT

0009-32
SAND

FOSTER-DIXIANA SAND COMPANY
DIXIANA MINE

0140-32
SAND

Ground Water Concerns

The ground water in the vicinity of the property owned by the S.C. Fire Academy is contaminated with volatile organics from spills and leaks. The facility is in the assessment phase. The surface water affected by the ground water contamination is Sixmile Creek.

Growth Potential

There is a high potential for growth in this watershed, primarily commercial and residential. Expansion of the industrial base is also expected. There are several major highways bisecting the watershed, together with the Columbia Metropolitan Airport and a rail line to aid transportation related growth. Water is available in the urbanized areas and can be easily extended by the Cities of West Columbia and Cayce; however, sewer is not widely available and will require a major investment.

03050110-030

(*Gills Creek*)

General Description

Watershed 03050110-030 is located in Richland County and consists primarily of *Gills Creek* and its tributaries. The watershed occupies 46,649 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Alpin-Lakeland-Pelion-Norfolk series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 48.79% urban land, 7.56% agricultural land, 1.33% scrub/shrub land, 0.07% barren land, 36.38% forested land, 3.34% forested wetland (swamp), and 2.53% water.

Gills Creek flows through the northeastern section of the City of Columbia and drains into the Congaree River. There are a total of 147.4 stream miles in this watershed, all classified FW. Gills Creek originates near Sesquicentennial State Park and accepts the drainage of Bynum Creek (Rose Creek), Rowell Creek, and Mack Creek before flowing through Boyden Arbor Pond (32 acres), Rockyford Lake, and Forest Lake (120 acres). Jackson Creek also originates near Sesquicentennial State Park and flows through Sesquicentennial Pond and Windsor Lake (46 acres) before accepting the drainage of Little Jackson Creek (Lightwood Knot Branch). Jackson Creek then flows through Carys Lakes (Arcadia Lakes) and Spring Lake to join Gills Creek in Forest Lake. Downstream of Forest Lake, Gills Creek accepts the drainage of Eightmile Branch and Pen Branch (Orphanage Branch) before flowing through Lake Katherine (80 acres). Wildcat Creek (Semmes Lake, Fork Creek, Upper Legion Lake, Lower Legion Lake) drains into Gills Creek downstream of Lake Katherine. Gills Creek and its associated wetlands drain into the Congaree River. Several oxbow lakes, including Alligator Lake, drain into Gills Creek near the river. Due to the absence of point source dischargers and the presence of endangered species, several streams (or portions of streams) may qualify as potential ORW candidates including: Rose Creek, Bynum Creek, and the headwaters of Gills Creek.

Water Quality

Gills Creek - There are two SCDHEC monitoring sites along Gills Creek. Aquatic life uses may be threatened at the upstream site due to high concentrations of zinc measured in 1988 and 1992, and a very high concentration of zinc measured in 1989. These are compounded by a significantly declining trend in dissolved oxygen concentration, and significantly increasing trends in pH and turbidity. Aquatic life uses are fully supported at the downstream site, however, a significantly increasing trend in turbidity was noted, most likely a result of nonpoint source runoff. A sediment sample revealed 2,4-dichlorophenol and a derivative of DDT (P,P'DDD) in 1992. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are not supported at either site due to fecal coliform bacteria excursions under Class FW standards.

Sesquicentennial Pond - The pond was stocked in 1989 with 300 grass carp, a biological control agent for aquatic plants, and sprayed with aquatic herbicides in 1990 to improve public access to the lake. No additional treatments by the Water Resources Division of the SCDNR have been planned.

Windsor Lake - Aquatic life uses are fully supported; however, a significantly increasing trend in turbidity was noted, most likely due to nonpoint source runoff. Excursions of pH occurred, however higher pH levels occur naturally in lakes with significant phytoplankton communities and do not represent standards violations. Recreational uses are fully supported.

Forest Lake - Aquatic life uses may be threatened due to very high concentrations of zinc measured from 1989-1992. A significantly increasing trend in turbidity was also noted at this site. Recreational uses are fully supported, but a significantly increasing trend in fecal coliform bacteria concentration warrants attention. The turbidity, fecal coliform, and zinc most likely result from nonpoint source runoff.

Sanitary Bathing Areas

<i>RECREATIONAL STREAM BATHING SITE</i>	<i>PERMIT # STATUS</i>
JACKSON CREEK SESQUICENTENNIAL POND	40-N16 ACTIVE
JACKSON CREEK WINDSOR LAKE	40-N06 ACTIVE

Point Source Contributions

Gills Creek is included on the Section 303(d) high priority list of waters targeted for TMDL development in relation to elevated nutrient and fecal coliform levels, and potential ammonia toxicity. Gills Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
GILLS CREEK ANCHOR CONTINENTAL PIPE #: 001 FLOW: 0.192 WQL FOR NH3-N, TRC	SC0002101 MINOR INDUSTRIAL WATER QUALITY
GILLS CREEK RIDGEWAY CHEVRON PIPE #: 001 FLOW: 0.0072 WQL FOR BOD5, TOXICS	SC0044784 MINOR INDUSTRIAL WATER QUALITY
GILLS CREEK FORMER TENNECO #62038 PIPE #: 001 FLOW: 0.00144 WQL FOR BOD5, TOXICS	SC0046035 MINOR INDUSTRIAL WATER QUALITY
JACKSON CREEK AMPHENOL PRODUCTS PIPE #: 001 FLOW: ***** WQL FOR BOD5, TOXICS	SC0046264 MINOR INDUSTRIAL WATER QUALITY

LITTLE JACKSON CREEK
AMERADA HESS #40245
PIPE #: 001 FLOW: 0.0072
WQL FOR BOD5, TOXICS

SC0044989
MINOR INDUSTRIAL
WATER QUALITY

LITTLE JACKSON CREEK
FAST FARE #SC-639
PIPE #: 001 FLOW: 0.026
WQL FOR BOD5, TOXICS

SC0045594
MINOR INDUSTRIAL
WATER QUALITY

LIGHTWOOD KNOT BRANCH
SEARS #1525/COLUMBIA MALL
PIPE #: 001 FLOW: 0.0288
WQL FOR BOD5, TOXICS

SC0044407
MINOR INDUSTRIAL
WATER QUALITY

EIGHTMILE BRANCH
PANTRY #470/FOREST ACRES
PIPE #: 001 FLOW: 0.00576
WQL FOR BOD5, TOXICS

SC0042218
MINOR INDUSTRIAL
WATER QUALITY

EIGHTMILE BRANCH
TENNECO DIRECT SERVICE STATION
PIPE #: 001 FLOW: 0.015
WQL FOR BOD5, TOXICS

SC0043770
MINOR INDUSTRIAL
WATER QUALITY

***LAND APPLICATION
FACILITY NAME***

***PERMIT #
TYPE***

SPRAY IRRIGATION
TEXTRON HOMELITE

ND0072818
MINOR INDUSTRIAL

Nonpoint Source Contributions

Gills Creek and Forest Lake are both included on the §319 list of waters impacted by urban runoff. Data received from outside agencies and water samples collected by the Department from Gills Creek indicate elevated levels of fecal coliform on numerous occasions, together with scattered elevated levels of turbidity and toxic materials (metals, organics), and excursions of DO and pH. Gills Creek is listed in the NPS Management Program as a priority for implementation action (the ongoing watershed project is described below). Water samples collected by the Department from Forest Lake indicate elevated fecal coliform levels numerous occasions and scattered elevated turbidity and toxic material (metals) levels. Forest Lake is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Windsor Lake has been added to the §319 list due to elevated levels of turbidity. An unnamed tributary to Jackson Creek has also been added to the list due to ground water contaminated with toxic materials (organics) affecting the surface water.

Gills Creek Watershed Project

The Gills Creek Watershed was selected as a nonpoint source pollution project area due to its urban impact on water quality. The watershed was assigned a top priority ranking by the State Nonpoint Source task force in relation to its level of nonpoint source pollution. The waters of Gills Creek are impacted by sediment, fecal coliform bacteria, and litter. Threatened uses and benefits include swimming, fishing,

reproduction and survival of aquatic life, wildlife habitat, lake storage capacity, and property value enhancement.

The focus of the NPS project, which began in October 1993, is to reduce or control the pollution sources in the Gills Creek watershed. Project components necessary to successfully achieve the goal include citizen education and participation activities, comprehensive analysis of the watershed, identification of all nonpoint pollution sources, and implementation of Best Management Practices (BMPs). The result of the project will be a sustainable watershed action plan that will address nonpoint source pollution at the local level.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
ANCHOR CONTINENTAL INDUSTRIAL	IWP-200 ACTIVE
ANCHOR CONTINENTAL INDUSTRIAL	----- CLOSED

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
CLARK PROPERTIES PONTIAC SAND/CLAY MINE	0470-40 SAND/CLAY
CHEROKEE, INC. HIGHWAY NO.1 PIT	0548-40 SAND\CLAY
CHEROKEE, INC. CONGAREE SAND PIT	0545-40 SAND

Ground Water Concerns

The ground water in the vicinity of the properties owned by Cardinal Company and Anchor Continental are contaminated with volatile organics from spills, leaks, or unknown sources. Anchor Continental is in the monitoring and assessment phase and Cardinal Chemical Company is in the assessment phase (a CERCLA site inspection is in progress). The surface water affected by the ground water contamination of both facilities is Gills Creek.

The ground water in the vicinity of the surface impoundments owned by Amphenol Products is contaminated with volatile organics. The facility is in the monitoring and assessment phase; ground water and surface water corrective action is planned. The surface water affected by the ground water contamination is an unnamed tributary to Jackson Creek.

Growth Potential

There is a high potential for continued growth in this urban watershed. Although primarily residential, there are a substantial number of commercial and industrial areas. Almost all of the watershed, which runs through the City of Columbia, has water and sewer readily available.

03050110-040

(Sandy Run)

General Description

Watershed 03050110-040 is located in Lexington and Richland Counties and consists primarily of *Sandy Run* and its tributaries. The watershed occupies 32,874 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Blaney-Fuquay series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 6%, with a range of 2-15%. Land use/land cover in the watershed includes: 0.03% urban land, 14.76% agricultural land, 3.88% scrub/shrub land, 0.22% barren land, 75.68% forested land, 4.32% forested wetland (swamp), and 1.11% water.

Little Sandy Run flows into Sandy Run which drains into the Congaree River. There are a total of 59.6 stream miles and several small recreational lakes (10-45 acres) in this watershed, all classified FW.

Water Quality

Sandy Run - Aquatic life and recreational uses are fully supported. Excursions of pH occurred; however, they are consistent with the swamp-influenced waters seen in this region of the state, and as such are considered natural conditions, not standards violations.

Point Source Contributions

There are currently no point source dischargers in the watershed.

Growth Potential

There is a low potential for growth in this watershed. The existing infrastructure of I-26 and U.S. Highways 176 and 21 may encourage some industrial growth to this area.

03050110-050

(*Cedar Creek*)

General Description

Watershed 03050110-050 is located in Richland County and consists primarily of *Cedar Creek* and its tributaries. The watershed occupies 64,559 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Dothan-Norfolk-Chastain-Marlboro-Tawcaw series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 3%, with a range of 0-15%. Land use/land cover in the watershed includes: 2.54% urban land, 18.36% agricultural land, 2.55% scrub/shrub land, 0.37% barren land, 56.68% forested land, 18.12% forested wetland (swamp), and 1.38% water.

The headwaters of Cedar Creek flow through Westons Pond (240 acres), Harmons Pond (50 acres), Morrells Pond (60 acres), Clarkson Pond (40 acres), and Duffies Pond (80 acres) before accepting the drainage of Reeves Branch and Myers Creek (Cabin Branch, Horsepen Branch, Goose Branch). After the confluence with Myers Creek, Cedar Creek flows through Wise Lake and Weston Lake and accepts drainage from Dry Branch before entering the Congaree River. The lower section of the watershed, from Wise Lake to the river, contains a large portion of the Congaree River Swamp National Monument, a wetland preserve. There are numerous recreational lakes and ponds in this watershed and a total of 199.3 stream miles, all classified FW.

Water Quality

Cedar Creek - There are two SCDHEC monitoring sites along Cedar Creek. Excursions of pH occurred at both sites; however, they are consistent with the swamp-influenced waters seen in this region of the state, and as such are considered natural conditions, not standards violations. Aquatic life uses are fully supported at the upstream site, although a significantly increasing trend in turbidity was noted, most likely a result of nonpoint source runoff. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported at the downstream site.

Sanitary Bathing Areas

*RECREATIONAL STREAM
BATHING SITE*

CEDAR CREEK
WESTONS POND

*PERMIT #
STATUS*

ACTIVE

Point Source Contributions

Goose Branch is included on the §304(l) short list for waters not expected to meet applicable water quality standards after full implementation of NPDES permit conditions due, in part or entirely, to point source discharges of §307(a) toxics; Square D Company was the facility discharging the toxic effluent (Cadmium, Copper, and Cyanide). Goose Branch is also included on the §304(l) long list for impacted waterbodies due to concerns for ambient toxicity.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
CEDAR CREEK SC AIR NATL. GUARD/MCENTIRE PIPE #: 001 FLOW: 0.02 DILUTION	SC0000701 MINOR INDUSTRIAL EFFLUENT
CEDAR CREEK US ARMY/FORT JACKSON PIPE #: 001 FLOW: 0.05 WQL FOR DO; DILUTION	SC0003786 MINOR INDUSTRIAL WATER QUALITY
CEDAR CREEK CEDAR CREEK MHP PIPE #: 001 FLOW: 0.01575 DILUTION	SC0032018 MINOR COMMUNITY EFFLUENT
CEDAR CREEK TRIB RICHLAND DISTRICT I/GADSDEN PIPE #: 001 FLOW: 0.01 WQL FOR NH3-N, DO, TRC, BOD5	SC0031526 MINOR COMMUNITY WATER QUALITY
CABIN BRANCH FRANKLIN PARK SD/CAROLINA WATER PIPE #: 001 FLOW: 0.04 WQL FOR TRC	SC0031399 MINOR COMMUNITY WATER QUALITY
CABIN BRANCH TRIB HOPKINS JR HIGH/RICHLAND CO. PIPE #: 001 FLOW: 0.03 WQL FOR NH3-N, DO, TRC	SC0031500 MINOR COMMUNITY WATER QUALITY
HORSEPEN BRANCH HOPKINS ELEMENTARY SCHOOL PIPE #: 001 FLOW: 0.03 WQL FOR NH3-N, TRC	SC0031496 MINOR COMMUNITY WATER QUALITY
GOOSE BRANCH SQUARE D COMPANY PIPE #: 001 FLOW: 0.007 WETLAND; WQL FOR BOD5	SC0004286 MAJOR INDUSTRIAL WATER QUALITY
GOOSE BRANCH SQUARE D COMPANY WETLAND; PIPE #: 002 FLOW: 0.02	SC0004286 MAJOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

Cedar Creek is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department indicate scattered elevated levels of fecal coliform and turbidity. Cedar Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

There is a low to moderate growth potential for this watershed. The area is predominately rural with small residential areas and one industry. U.S. Highway 378 and Bluff Road (Highway 48) cross the watershed, as does a rail line. The area adjacent to the City of Columbia (Garners Ferry/Leesburg Road) has the only available water and sewer service, and is the primary area of growth in the watershed.

03050110-060

(Toms Creek)

General Description

Watershed 03050110-060 is located in Richland County and consists primarily of *Toms Creek* and its tributaries. The watershed occupies 36,167 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Dothan-Norfolk-Vaughan-Marlboro-Chastain series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 4%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.70% urban land, 16.03% agricultural land, 5.22% scrub/shrub land, 1.32% barren land, 62.90% forested land, 11.90% forested wetland (swamp), and 1.94% water.

Toms Creek watershed contains a total of 78.9 stream miles, all classified FW. The headwaters of Toms Creek flow through Haithcock Pond (60 acres) and Westons pond (50 acres) before being joined by Ray Branch. The creek then flows through Drafts Pond (80 acres) and accepts drainage from McKenzie Creek before flowing into the Congaree River. Another natural resource in the watershed is the Congaree River Swamp National Monument, which extends across the lower end of the watershed.

Water Quality

Toms Creek - Aquatic life and recreational uses are fully supported. Excursions of pH occurred; however, they are consistent with the swamp-influenced waters seen in this region of the state, and as such are considered natural conditions, not standards violations. Recreational uses are considered to be fully supported, despite fecal coliform bacteria excursions, due to the small number of samples.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Growth Potential

There is a low potential for growth in this watershed. U.S. Highway 378 and Bluff Road cross the area, together with two rail lines. The area along Garners Ferry Road is the only area of potential growth.

03050110-070

(Congaree River)

General Description

Watershed 03050110-070 is located in Richland and Calhoun Counties and consists primarily of the **Congaree River** and its tributaries from Toms Creek to its confluence with the Wateree River Basin. The watershed occupies 47,518 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Marlboro-Chastain-Faceville-Tawcaw-Norfolk series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.09% urban land, 14.32% agricultural land, 5.55% scrub/shrub land, 0.12% barren land, 52.38% forested land, 23.10% forested wetland (swamp), 0.53% nonforested wetland (marsh), and 3.91% water.

This section of the Congaree River incorporates a total of 109.1 stream miles, all classified FW. Griffins Creek drains into Running Lake, which in turn flows through Little Lake, Big Lake, and into Running Creek. Running Creek drains into Singleton Creek, which flows through Bates Old River to reach the Congaree River. Buckhead Creek (True Blue Creek) enters the river further downstream. A small portion of the Congaree River Swamp National Monument is located near the top of the watershed, where the Toms Creek watershed (03050110-060) enters. There are several small lakes in this watershed used for recreational purposes. As a reach of the Congaree River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

Congaree River - Aquatic life uses are not supported at the site just upstream of the Wateree River confluence due to a high concentration of copper measured in 1988 and a high concentration of zinc measured in 1989. A sediment sample revealed 2,6-dinitrotoluene in 1989. Significantly increasing trends in pH and turbidity were also noted. Recreational uses are fully supported.

Point Source Contributions

A TMDL (total maximum daily load) was calculated for the Congaree River for ammonia toxicity due to the large size and close proximity of the dischargers. The TMDL for NH₃-N is 8963 lbs/day.

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
GRIFFINS CREEK	SC0038237
TOWN OF EASTOVER	MINOR MUNICIPAL
PIPE #: 001 FLOW: 0.025	WATER QUALITY
WQL FOR NH ₃ -N, DO, TRC, BOD ₅	
GRIFFINS CREEK	SC0041432
TOWN OF EASTOVER	MINOR MUNICIPAL

PIPE #: 001 FLOW: 0.1
WQL FOR NH3-N, DO, TRC, BOD5

WATER QUALITY

Nonpoint Source Contributions

This section of the Congaree River has been added to the §319 list due to elevated levels of zinc and copper.

Growth Potential

There is a low potential for growth in this rural watershed. There are some silvicultural activities, but no water or sewer service available.

Description of Watersheds Within WMU-0203

Watershed Management Unit (WMU) 0203 consists primarily of the **Edisto River Basin**, which originates in the Sandhills region of the State, flows through the Upper and Lower Coastal Plain regions, and into the Coastal Zone region. The Edisto River Basin encompasses 30 watersheds and some 2 million acres of which 2.0% is urban land, 21.4% is agricultural land, 13.6% is scrub land, 0.5% is barren land, 46.0% is forested land, 12.1% is forested wetland, 2.0% is nonforested wetland, and 2.4% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Orangeburg and Walterboro. There are a total of 4,352.2 stream miles and 116.0 square miles of estuarine areas in WMU-0203.

The confluence of Chinquapin Creek and Lightwood Knot Creek form the North Fork Edisto River, which is joined downstream by Black Creek, Bull Swamp Creek, and Caw Caw Swamp. The South Fork Edisto River accepts drainage from Shaw Creek, Dean Swamp Creek, Goodland Creek, and Roberts Swamp before merging with the North Fork Edisto River to form the Edisto River. Downstream from the confluence, the Edisto River is joined by Cattle Creek, Indian Field Swamp, and Four Hole Swamp. Prior to joining the Edisto River, Four Hole Swamp accepts drainage from Cow Castle Creek, Providence Swamp, Horse Range Swamp, and Dean Swamp. Downstream from Four Hole Swamp, the Dawho River enters the Edisto River, and their confluence forms the South Edisto River and the North Edisto River, which drain to the Atlantic Ocean.

Fish Consumption Advisory

A fish consumption advisory has been issued by SCDHEC for the North Fork Edisto River, South Fork Edisto River, Four Hole Swamp, and the freshwater portions of the Edisto River advising people to limit the amount of some types of fish consumed from these rivers and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The fish consumption guidelines are based on diets of one type of fish only. If a person consumes several of the species listed for a river, then the person should cut back even further on the amounts of each species consumed. For example, if a person eats a pound of largemouth bass from the North Fork Edisto River, the person should not eat any bowfin from that river that month. The types of fish with mercury and the acceptable amounts of those fish that can be consumed are as follows: **North Fork Edisto River** (Bowfin - 1 lb./month, Largemouth bass - 1lb./month); **South Fork Edisto River** (Bowfin - 1.25 lbs./month, Largemouth bass - 0.5 lb./month); **Edisto River and Four Hole Swamp** (Bowfin - 1 lb./month, Catfish - 0.75 lb./month, Largemouth bass - 0.75 lb./month).

Climate

Data compiled from National Weather Service stations in Aiken, Blackville, Bamberg, Orangeburg, Branchville, Walterboro, Pelion, and Springfield were used to determine the general climate information for the WMU-0203 area. Historical climatological records (SCWRC 1990) were compiled to provide the normal values. The normal annual rainfall in the area was 48.37 inches. The highest seasonal rainfall occurred in the summer, due to thunderstorms, with 15.76 inches; 9.27, 11.16 and 12.18 inches of rain fell in the fall, winter,

and spring, respectively. The average annual daily temperature was 64.1 °F. On a seasonal basis, summer temperatures averaged 79.2 °F and fall, winter, and spring temperatures averaged 65.3, 50.0, and 64.0 °F, respectively.

Monitoring Station Descriptions in WMU-0203

03050203-010

(Chinquapin Creek and Lightwood Knot Creek)

General Description

Watershed 03050203-010 is located in Lexington and Aiken Counties and consists primarily of *Chinquapin Creek and Lightwood Knot Creek* and their tributaries. The watershed occupies 54,265 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Blaney-Troup series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 7%, with a range of 0-15%. Land use/land cover in the watershed includes: 7.06% urban land, 26.22% agricultural land, 8.17% scrub/shrub land, 0.36% barren land, 52.38% forested land, 4.85% forested wetland (swamp), and 0.96% water.

Chinquapin and Lightwood Knot Creeks join to form the North Fork Edisto River. Chinquapin Creek originates near the Town of Monetta and accepts drainage from Duncan Creek, Horsepen Creek, Mare Creek, Rock Creek, and Shirley Branch before merging with Lightwood Knot Creek. The Town of Batesburg lies near the headwaters of Duncan Creek and uses a small lake associated with the drainage for its water supply. Lightwood Knot Creek flows through several ponds including Abells Millpond and Brodie Millpond, before accepting drainage from Hellhole Creek (Mill Creek, Rocky Ford Creek, Tanker Branch), Marlowe Creek, Thasher Branch, Mill Creek, and Long Branch. There are a total of 101.5 stream miles and numerous small lakes (10-50 acres) in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Chinquapin Creek - Aquatic life uses may be threatened at this site due to a very high concentration of zinc measured in 1988, together with a significantly declining trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significantly declining trend in fecal coliform bacteria concentration suggests improving conditions.

Lightwood Knot Creek - Aquatic life uses are fully supported, but recreational uses are only partially supported due to fecal coliform bacteria excursions.

Sanitary Bathing Areas

*RECREATIONAL STREAM
BATHING SITE*

LIGHTWOOD KNOT CREEK

*PERMIT #
STATUS*

ACTIVE

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
TOWN OF BATESBURG (M)	LIGHTWOOD KNOT CK	0.43
TOWN OF BATESBURG (M)	DUNCAN CREEK	0.43

Point Source Contributions

Mill Creek is included on the §304(l) short list for waters not expected to meet applicable water quality standards after full implementation of NPDES permit conditions due, in part or entirely, to point source discharges of §307(a) toxics; J.B. Martin Company (now closed) was the facility discharging the toxic effluent (Chromium, Nickel, and Zinc). Mill Creek is also included on the §304(l) long list for impacted waterbodies due to concerns for ambient toxicity.

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION (EF/WQ)</i>
<i>COMMENT</i>	
DUNCAN CREEK	SC0024465
TOWN OF BATESBURG	MAJOR MUNICIPAL
PIPE #: 001 FLOW: 2.0	WATER QUALITY
WQL FOR NH3-N, DO, TRC	
DUNCAN CREEK	SC0041084
TOWN OF BATESBURG/WTP	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.0285	EFFLUENT
TREATED FILTER BACKWASH	

Nonpoint Source Contributions

Chinquapin Creek is included on the §319 list of waters impacted by agricultural activities. Samples collected by the Department show scattered elevated levels of toxic materials (metals). Computer modelling indicates a high potential for NPS problems from agricultural activities for Chinquapin Creek.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
BATESBURG-LEESVILLE LANDFILL	DWP-013
DOMESTIC	CLOSED
BATESBURG INDUSTRIAL WASTE	IWP-235
INDUSTRIAL	ACTIVE

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
JB RAWL	0941-32
RAWL-COTTON BRANCH ROAD MINE	SAND

WILSON BROTHERS SAND COMPANY, INC. RICARD MINE	0639-32 SAND
JM HUBER CORP. MARLOWE CREEK	0975-32 KAOLIN
WILSON BROTHERS SAND COMPANY, INC. SMITH MINE	0934-32 SAND
WILSON BROTHERS SAND COMPANY, INC. FRICK MINE	0718-32 SAND

Growth Potential

There is a low potential for growth in this rural, undeveloped watershed. The Town of Batesburg/Leesville has the only water and sewer service in the area. The current raw water supply is limited and the ground water has excessive levels of radium.

03050203-020

(North Fork Edisto River)

General Description

Watershed 03050203-020 is located in Aiken and Lexington Counties and consists primarily of the **North Fork Edisto River** and its tributaries from its origin to Black Creek. The watershed occupies 62,944 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Troup-Fuquay series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.39% urban land, 22.40% agricultural land, 12.91% scrub/shrub land, 54.84% forested land, 8.36% forested wetland (swamp), and 1.10% water.

The North Fork Edisto River accepts drainage from the Chinquapin Creek and Lightwood Knot Creek watershed (03050203-010), Carneys Creek, Crooker Branch, and Goose Platter Creek in the upper portion of the watershed. Other tributaries that enter the river as it moves downstream include Chalk Hill Creek (Tom Branch), Marrow Bone Swamp Creek (Juniper Creek), Wolf Pit Branch, Big Branch, Hood Branch (Church Branch), Rambo Branch, and Giddy Swamp Creek. There are numerous small recreational ponds or lakes including Steedman Pond, Chalk Hill Millpond, Collums Millpond, and Amelia Lake. There are a total of 134.0 stream miles in this watershed, all classified FW. Due to the absence of point source dischargers and the presence of endangered species, all or part of the streams in this watershed may qualify as potential ORW candidates.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

North Fork Edisto River - There are two SCDHEC monitoring stations along this section of the North Fork Edisto River. Aquatic life and recreational uses are fully supported at the headwaters site. Dissolved oxygen and pH excursions occurred; however, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. Aquatic life uses may be threatened at the downstream site due to a very high concentration of zinc measured in 1992. Recreational uses are fully supported, despite fecal coliform bacteria excursions, due to the small number of samples.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Mining Activities

MINING COMPANY
MINE NAME

H. ANDERSON CONSTRUCTION CO.
I-20 PIT

PERMIT #
MINERAL

0668-32
SAND

Growth Potential

There is a low potential for growth in this watershed.

03050203-030

(*Black Creek*)

General Description

Watershed 03050203-030 is located in Lexington County and consists primarily of *Black Creek* and its tributaries. The watershed occupies 40,828 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Fuquay series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 7%, with a range of 2-15%. Land use/land cover in the watershed includes: 5.67% urban land, 19.80% agricultural land, 15.56% scrub/shrub land, 0.39% barren land, 50.78% forested land, 6.27% forested wetland (swamp), and 1.53% water.

Black Creek originates near the Town of Gilbert and drains into the North Fork Edisto River. Black Creek flows through Taylor Pond and several other ponds before accepting the drainage of Pond Branch and flowing into Paxton Millpond. Downstream of the millpond, Little Black Creek enters Black Creek, which then flows through Clarks Millpond to accept drainage from Cedar Pond Branch, Spring Branch, Big Branch, McCartha Branch, and Coney Branch. There are a total of 80.5 stream miles in this watershed, all classified FW. Due to the absence of point source dischargers and the presence of endangered species, all or part of the streams in this watershed may qualify as potential ORW candidates.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Black Creek - Aquatic life and recreational uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations.

Sanitary Bathing Areas

**RECREATIONAL STREAM
BATHING SITE**

BLACK CREEK

**PERMIT #
STATUS**

ACTIVE

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Landfill Activities

<i>SOLID WASTE LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
OWEN INDUSTRIAL PRODUCTS INDUSTRIAL	IWP-241 ACTIVE

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
KE SHEALY & SON POND BRANCH MINE	0368-32 SAND

Growth Potential

There is a low potential for growth in this watershed.

03050203-040

(North Fork Edisto River)

General Description

Watershed 03050203-040 is located in Lexington, Aiken, and Orangeburg Counties and consists primarily of the **North Fork Edisto River** and its tributaries from Black Creek to Bull Swamp Creek. The watershed occupies 121,575 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Vaughan-Lakeland-Troup series. The erodibility of the soil (K) averages 0.13; the slope of the terrain averages 5%, with a range of 0-25%. Land use/land cover in the watershed includes: 2.20% urban land, 28.05% agricultural land, 12.02% scrub/shrub land, 0.77% barren land, 48.80% forested land, 7.67% forested wetland (swamp), and 0.49% water.

This section of the North Fork Edisto River accepts drainage from Cedar Creek (Lynch Branch, Rast Pond, Fort Pond, Thrasher Branch, Crawford Branch), Jackson Branch, Hollow Creek (Ritter Branch, Little Hollow Creek), Pond Branch (Hunter Branch), Salem Creek, Penn Branch, and Big Beaver Creek (Little Beaver Creek). Further downstream, Turkey Branch (Gibson Branch, Hutto Mill Pond) enters the river. There are numerous ponds and a total of 186.6 stream miles in this watershed, all classified FW. Due to the absence of point source dischargers and the presence of endangered species, all or part of the streams in this watershed may qualify as potential ORW candidates. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

North Fork Edisto River - There are two SCDHEC monitoring sites along this section of the North Fork Edisto River. Aquatic life uses are fully supported at the upstream site, but may be threatened at the downstream site due to a very high concentration of zinc measured in 1992. Significantly increasing trends in pH and turbidity were also noted at the upstream site. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. Recreational uses are fully supported at both sites.

Point Source Contributions

A permit driven TMDL was calculated for the North Fork Edisto River that proposed ammonia limits at 1,250 lbs/day as a monthly average, and TRC limits at 14.6 lbs/day for a monthly average and 25.24 lbs/day for a daily maximum.

**LAND APPLICATION
FACILITY NAME**

SPRAY IRRIGATION

**PERMIT #
TYPE**

ND0063797

TOWN OF NORTH

MINOR MUNICIPAL

SPRAY IRRIGATION
PELION ELEM. SCHOOL

ND0013561
MINOR COMMUNITY

SEPTAGE INJECTION
CE TAYLOR PUMPING, INC.

ND0070149
MINOR INDUSTRIAL

Nonpoint Source Contributions

The North Fork Edisto River is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department show scattered elevated levels of turbidity and toxic materials (metals) and pH excursions. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream.

Growth Potential

There is a low potential for growth in this watershed. There is a small industrial park north of the Town of Pelion that may attract future industrial prospects, but there is currently no industry in the watershed. S.C. Highway 302 and a rail line passes through the area.

03050203-050
(Bull Swamp Creek)

General Description

Watershed 03050203-050 is located in Lexington, Orangeburg, and Calhoun Counties and consists primarily of **Bull Swamp Creek** and its tributaries. The watershed occupies 54,318 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Lakeland-Vaughn series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 8%, with a range of 0-25%. Land use/land cover in the watershed includes: 1.41% urban land, 26.81% agricultural land, 5.56% scrub/shrub land, 1.00% barren land, 59.01% forested land, 5.38% forested wetland (swamp), and 0.83% water.

Bull Swamp Creek originates near the Town of Gaston and flows through the Town of Swansea before draining into the North Fork Edisto River. Bull Swamp Creek flows through Spires Pond before accepting drainage from Boggy Branch, Fourth Creek, Third Creek (Redmond Pond), Cow Branch, Gardner Branch, and Little Bull Swamp Creek (Cowpen Swamp, Turkey Branch). Bull Swamp Creek then flows through Etheridge Mill Pond (100 acres) and into the North Fork Edisto River. There are a total of 108.0 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Bull Swamp Creek - There are three SCDHEC monitoring sites along Bull Swamp Creek, which was Class B until April, 1992. Bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. Aquatic life uses are not supported at the upstream site due to dissolved oxygen excursions; however, this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. Significantly increasing trends in pH and turbidity were also noted at this site. Recreational uses are only partially supported due to fecal coliform bacteria excursions. Aquatic life uses are fully supported at the midstream site, but significantly increasing trends in pH and turbidity were noted, and P,P'DDT was detected in the 1990 sediment sample. The use of DDT was banned in 1973, but it is very persistent in the environment. Recreational uses are fully supported. Aquatic life uses are fully supported at the downstream site based on macroinvertebrate community data. Recreational uses are also fully supported.

Point Source Contributions

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION (EF/WQ)</i>
<i>COMMENT</i>	
BULL SWAMP CREEK	SC0023205
TOWN OF SWANSEA	MINOR MUNICIPAL
PIPE #: 001 FLOW: 0.160	WATER QUALITY
WETLAND; WQL FOR NH3-N, TRC	
BOGGY BRANCH	SC0034541
GASTON COPPER RECYCLING PLT	MINOR INDUSTRIAL
PIPE #: 001 FLOW: ---	WATER QUALITY
NON-CONTACT COOLING WATER; WQL FOR BOD5	

Nonpoint Source Contributions

Bull Swamp Creek is included on the §319 list of waters impacted by agricultural and construction activities. Water samples collected by the Department show scattered elevated levels of turbidity and toxic materials (pesticides). Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff for this stream. Bull Swamp Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

There is a low potential for growth in this watershed. The Town of Swansea has a limited water and sewer system, and would need to increase its capacity to accommodate future growth. The town's sewer system discharges to Bull Swamp Creek, which has a very limited assimilative capacity. There are plans to extend water and sewer services from the City of Cayce, but not in the near future. U.S. Highways 321 and 178, together with a rail line run through the watershed.

03050203-060

(North Fork Edisto River)

General Description

Watershed 03050203-060 is located in Orangeburg and Calhoun Counties and consists primarily of the **North Fork Edisto River** and its tributaries from Bull Swamp Creek to Caw Caw Swamp. The watershed occupies 56,655 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Dothan-Fuquay-Noboco-Johnston series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 1.78% urban land, 21.44% agricultural land, 6.70% scrub/shrub land, 0.57% barren land, 52.65% forested land, 16.36% forested wetland (swamp), and 0.49% water.

This section of the North Fork Edisto River incorporates a total of 102.1 stream miles, all classified FW. Tributaries that drain into the river include: Long Branch, Double Branch, Great Branch (Grape Branch, Moss Pond), Limestone Creek (Little Limestone Creek), Mill Branch, and Fourmile Creek. There are numerous recreational ponds in this watershed. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

North Fork Edisto River - Aquatic life uses are fully supported; however, significantly increasing trends in pH and turbidity were noted. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. A high concentration of zinc was measured in water in 1991. Recreational uses are fully supported.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

The North Fork Edisto River is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department show scattered elevated levels of toxic materials and turbidity, and pH excursions. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream.

Growth Potential

There is a low potential for growth in this watershed; however, the existing infrastructure of U.S. Highway 178 out of the City of Orangeburg may encourage some growth.

03050203-070

(Caw Caw Swamp)

General Description

Watershed 03050203-070 is located in Calhoun and Orangeburg Counties and consists primarily of **Caw Caw Swamp** and its tributaries. The watershed occupies 50,364 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Wagram-Lakeland-Dothan series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 7.45% urban land, 16.99% agricultural land, 7.34% scrub/shrub land, 0.78% barren land, 58.28% forested land, 8.40% forested wetland (swamp), and 0.77% water.

Caw Caw Swamp flows through Redmond Pond and is joined by Murph Mill Creek (Mack Branch, Crim Creek), Sweetwater Lake, Burke Creek, Saddler Swamp, Early Branch, Cooner Branch, and Turkey Hill Branch. Downstream of Turkey Hill Branch, the swamp flows through a 100 acre-lake and drains into the North Fork Edisto River. There are a total of 70.8 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Caw Caw Swamp - Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Sanitary Bathing Areas

RECREATIONAL STREAM BATHING SITE

PERMIT # STATUS

CAW CAW SWAMP TRIB
SWEETWATER LAKE

09-N05
ACTIVE

Point Source Contributions

Caw Caw Swamp is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT

NPDES# TYPE LIMITATION (EF/WQ)

COONER BRANCH
ORANGEBURG PREP SCHOOL

SC0028606
MINOR COMMUNITY

PIPE #: 001 FLOW: 0.012
WQL FOR NH3-N, TRC

WATER QUALITY

Nonpoint Source

Caw Caw Swamp has been added to the §319 list due to elevated levels of fecal coliform bacteria.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

JF CLECKLEY & COMPANY
MINE #8

0536-38
SAND

Growth Potential

There is a low to moderate potential for urban growth in the northwest section of the City of Orangeburg. Interstate 26 bisects the watershed which includes four interchanges near the Town of St. Matthews. U.S. Highway 601 and a rail line run along the eastern watershed border connecting Orangeburg to St. Matthews.

03050203-080

(*North Fork Edisto River*)

General Description

Watershed 03050203-080 is located in Orangeburg County and consists primarily of the lowest reach of the **North Fork Edisto River** and its tributaries from Caw Caw Swamp to its confluence with the South Fork Edisto River. The watershed occupies 58,125 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Johnston-Goldsboro-Noboco-Meggett-Dorovan series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 8.06% urban land, 22.34% agricultural land, 4.47% scrub/shrub land, 0.39% barren land, 47.34% forested land, 17.04% forested wetland (swamp), and 0.36% water.

This section of the North Fork Edisto River originates at the City of Orangeburg, and accepts drainage from Pen Branch, Anderson Branch, Whirlwind Creek, Dry Swamp, and Cooper Swamp before merging with the South Fork Edisto River. Whirlwind Creek flows through a 40 acre-lake used for water supply and as a county fish hatchery. There are a total of 161.4 stream miles in this watershed, all classified FW. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

North Fork Edisto River - There are six SCDHEC monitoring sites along this section of the North Fork Edisto River. Aquatic life and recreational uses are fully supported at all six sites. Although pH excursions occurred at all sites, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. At the furthest upstream site (E-007), a significantly increasing trend in turbidity was noted. Further downstream (E-007A), significantly increasing trends in pH and turbidity were noted, and a derivative of DDT (P,P'DDE) was detected in a 1991 sediment sample. The use of DDT was banned in 1973, but it is very persistent in the environment. Continuing downstream, at stations E-007B, E-007C, and E-008 significantly increasing trends in turbidity were again noted. The turbidity seen in this watershed is most likely a result of nonpoint source runoff. Also at station E-008, trichlorofluoromethane was detected in water in 1988, and a very high concentration of zinc was measured in sediment in 1990.

Water Supply

WATER USER (TYPE)	STREAM	AMOUNT WITHDRAWN (MGD)
CITY OF ORANGEBURG (M)	N.FORK EDISTO RIVER	5.50
ETHYL CORP. (I)	N.FORK EDISTO RIVER	1.44
ORANGEBURG PLT.		

Point Source Contributions

The North Fork Edisto River is included on the §304(l) long list of impacted waterbodies due to concerns for non-§307(a) toxic pollutants. A permit driven TMDL was calculated for the North Fork Edisto River that proposed ammonia limits at 1,250 lbs/day as a monthly average, and TRC limits at 14.6 lbs/day for a monthly average and 25.24 lbs/day for a daily maximum.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
NORTH FORK EDISTO RIVER GREENWOOD MILLS, INC./LINE PIPE #: ---- FLOW: ---- PLANT CLOSED	SC0001163 MINOR INDUSTRIAL ----
NORTH FORK EDISTO RIVER ETHYL CORP./ORANGEBURG PIPE #: 001 FLOW: 0.872 WQL FOR NH3-N, TRC	SC0001180 MAJOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER CITY OF ORANGEBURG WWTP PIPE #: 001 FLOW: 9.000 WQL FOR NH3-N, TRC	SC0024481 MAJOR MUNICIPAL WATER QUALITY
NORTH FORK EDISTO RIVER SOUTHSIDE APARTMENTS PIPE #: 001 FLOW: 0.03 WQL FOR NH3-N, TRC	SC0029751 MINOR COMMUNITY WATER QUALITY
NORTH FORK EDISTO RIVER ORANGEBURG SAUSAGE CO. PIPE #: 001 FLOW: .0027 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0030066 MINOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER CITY OF ORANGEBURG/PEARSON WTP PIPE #: 001 FLOW: .35	SC0038008 MINOR INDUSTRIAL EFFLUENT
NORTH FORK EDISTO RIVER FASHION FABRICS OF AMERICA PIPE #: 001 FLOW: .5917 WQL FOR NH3-N, TRC	SC0043419 MAJOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER CHEVRON FOOD MART/ORANGEBURG PIPE #: 001 FLOW: 0.0072 WQL FOR BOD5, TOXICS	SC0043613 MINOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER WILKERSON FUEL CO. PIPE #: 001 FLOW: 0.0072 WQL FOR BOD5, TOXICS	SC0044253 MINOR INDUSTRIAL WATER QUALITY

NORTH FORK EDISTO RIVER
COUNCIL ENERGY
PIPE #: 001 FLOW: .0072
WETLAND; WQL FOR BOD5

SC0045560
MINOR INDUSTRIAL
WATER QUALITY

WHIRLWIND CREEK
EDISTO HIGH SCHOOL
PIPE #: 001 FLOW: 0.017
WQL FOR NH3-N, DO, TRC, BOD5

SC0040185
MINOR MUNICIPAL
WATER QUALITY

Nonpoint Source Contributions

The North Fork Edisto River is included on the §319 list of waters impacted by agricultural activities and urban runoff. Information supplied by Department District Engineers and water samples collected by the Department indicate scattered elevated levels of turbidity and toxic materials (metals, pesticides, organics), and pH excursions. Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff for this stream.

Growth Potential

There is a low to moderate potential for growth in this watershed. The western portion of the City of Orangeburg is located in this watershed and U.S. Highway 601 connects it to the Towns of Bamberg and St. Matthews. The U.S. Highway 21 corridor runs from Orangeburg to the Town of Rowesville and is paralleled by a rail line.

03050204-010

(*South Fork Edisto River*)

General Description

Watershed 03050204-010 is located in Aiken, Edgefield, and Saluda Counties and consists primarily of the **South Fork Edisto River** and its tributaries from its origin to Shaw Creek. The watershed occupies 141,006 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Troup-Fuquay-Lakeland series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 6%, with a range of 0-25%. Land use/land cover in the watershed includes: 0.51% urban land, 29.82% agricultural land, 14.55% scrub/shrub land, 0.15% barren land, 44.40% forested land, 9.51% forested wetland (swamp), and 1.06% water.

The South Fork Edisto River originates near the Town of Johnston and incorporates the drainage of First Branch, Hall Branch, and Temples Creek (Flat Rock Branch). The river then flows through Holmes Pond and accepts drainage from Satcher Branch, Long Branch, Beech Creek (Spann Branch, Bog Branch), Mill Creek (Flat Rock Creek, Pitts Branch, Lotts Creek), Easter Branch, Bulls Branch, Long Branch, Jumping Gut Creek, Mile Branch, and Kalop Branch. Further downstream, the river accepts drainage from Bridge Creek (Reedy Fork, Mill Branch), McTier Creek (Gully Creek, Harrison High Pond, Sawyer Pond, Boggy Branch, Holston Branch), Little Branch, Sandy Branch, Big Branch, Muddy Branch, and Beaverdam Branch (Smith Branch). In the lower portion of the watershed, Rocky Springs Creek (Wildcat Branch, Long Branch, Huttos Pond, Pitman Branch, Poplar Branch) enters the river followed by Purvis Branch, Clarks Mill Creek, and Cedar Creek (Neeses Lake). There are numerous ponds and lakes located along the tributaries draining into the river, used for recreation and irrigation. This watershed contains a total of 316.2 stream miles, all classified FW. Due to the absence of point source dischargers and the presence of endangered species, the Harrison High Pond and the headwaters of Gully Creek may qualify as potential ORW candidates.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

South Fork Edisto River - There are three SCDHEC monitoring sites along this section of the South Fork Edisto River. Aquatic life uses are fully supported at the upstream site, although a significantly declining trend in pH and a significantly increasing trend in turbidity were noted. The turbidity is most likely due to nonpoint source runoff. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards, however a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions. This creek was Class B until April, 1992 and bacterial conditions are expected to continue to improve as new NPDES permit limits are instituted in the watershed.

Aquatic life uses are fully supported at the midstream site based on macroinvertebrate community data, although habitat degradation due to sedimentation was evident. A significantly declining trend in pH

and a significantly increasing trend in turbidity due to nonpoint source runoff were again noted. Recreational uses are fully supported at this site. At the downstream site, aquatic life and recreational uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations.

First Branch - Aquatic life uses are fully supported; however, a significantly increasing trend in total phosphorus was noted. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions under Class FW standards.

McTier Creek - Aquatic life uses are fully supported based on macroinvertebrate community data.

Sanitary Bathing Areas

<i>RECREATIONAL STREAM BATHING SITE</i>	<i>PERMIT # STATUS</i>
GULLY CREEK TRIB BISHOP GRAVATT CENTER	O2-N06 ACTIVE

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
JM HUBER CORP. (I) EDISTO PLT.	S.FORK EDISTO RIVER	0.288
JM HUBER CORP. (I) EDISTO PLT.	S.FORK EDISTO RIVER	2.448

Point Source Contributions

The South Fork Edisto River is included on the Section 303(d) low priority list of waters that may require development of a TMDL in relation to potential ammonia toxicity. The South Fork Edisto River is also included on the §304(l) long list of impacted waterbodies due to concerns for non-§307(a) toxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SOUTH FORK EDISTO RIVER ECW&SA/JOHNSTON #1 PLT PIPE #: 001 FLOW: 0.968 WQL FOR NH3-N, DO, TRC, BOD5	SC0025691 MINOR MUNICIPAL WATER QUALITY
SOUTH FORK EDISTO RIVER JM HUBER CORP./EDISTO PLANT PIPE #: 001 FLOW: ----	SC0024341 MINOR INDUSTRIAL EFFLUENT
FLAT ROCK CREEK TOWN OF RIDGE SPRING/SOUTH LAGOON PIPE #: 001 FLOW: 0.150	SC0022268 MINOR MUNICIPAL WATER QUALITY

WQL FOR NH3-N, DO, TRC, BOD5

BEAVERDAM BRANCH
KENTUCKY-TENNESSEE CLAY CO.
PIPE #: 001 FLOW: 0.15-0.45
STORMWATER

SC0046388
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Contributions

The South Fork Edisto River is included on the §319 list of watersheds targeted for implementation action due to run off from agricultural activities and resource extraction. The South Fork Edisto River is also included on the §304(l) long list for waters impacted by nontoxic pollutants. Water samples collected by the Department indicate scattered elevated turbidity levels and pH excursions. Computer modelling indicates a high potential for NPS problems from agricultural and surface mining activities for the South Fork Edisto River.

Water samples collected by the Department from First Creek indicates scattered elevated levels of total phosphorus and fecal coliform. First Branch is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
JAMES HENRY BLEDSOE CONSTRUCTION CO. MONETTA CLAYPIT	0956-02 SAND/CLAY
HOLMES TIMBER, INC. ABNEY MINE	0954-02 SAND/CLAY
GL WILLIAMS LANDSCAPING, INC. PIT 49	0978-02 SAND
JM HUBER CORP. CORDER MINE	0406-02 KAOLIN
SOUTHEASTERN CLAY COMPANY SEIGLER MINE	0070-02 KAOLIN
SOUTHEASTERN CLAY COMPANY SHADE MINE	0071-02 KAOLIN
WR GRACE & CO. SCOTT MINE	0072-02 KAOLIN
KENTUCKY TENNESSEE CLAY CO. GENTRY MINE	0594-02 KAOLIN
BORAL BRICK, INC. - MERRY DIV. BELL MINE	0456-02 KAOLIN
JM HUBER CORP. BRODIE MINE	0038-02 KAOLIN

SOUTHERN BRICK COMPANY
ANDERSON MINE

0618-02
KAOLIN

JM HUBER CORP.
LAUGHLIN MINE

0811-02
KAOLIN

Growth Potential

The greatest potential for growth in this agricultural-based watershed surrounds the three interchanges of Interstate 20: U.S. Highway 1, S.C. Highway 391, and S.C. Highway 39. A rail line runs between the Towns of Johnston and Monetta, both of which show slightly increasing populations. The Town of Johnston would be able to tie into the proposed Edgefield County Water and Sewer Authority's Regional Sewer Collection System project that would connect with the Horse Creek Valley WWTP. Other growth potentials for the area included the proposed industrial park at the interchange of S.C. Highways 23 and 121 in Johnston, and the proposed construction of both a federal and a state prison in the area.

03050204-020

(Shaw Creek)

General Description

Watershed 03050204-020 is located in Aiken and Edgefield Counties and consists primarily of **Shaw Creek** and its tributaries. The watershed occupies 94,775 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Lakeland-Orangeburg-Wagram series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 5%, with a range of 0-25%. Land use/land cover in the watershed includes: 2.50% urban land, 29.63% agricultural land, 15.22% scrub/shrub land, 0.18% barren land, 42.64% forested land, 8.91% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.91% water.

Shaw Creek originates nears the Town of Trenton and flows past the City of Aiken to drain into the South Fork Edisto River. There are numerous recreational ponds and lakes in the watershed, and several in the upper portion of the watershed are used for irrigational purposes as well. Shaw Creek receives drainage from Buck Branch and Tiger Creek before flowing through Lone Pond and accepting drainage from Hillyer Branch, Paces Branch, Beaverdam Branch, Hall Branch, Melton Branch, Curry Branch, Mason Branch, Boggy Branch, Brogdon Branch, Dairy Branch, and Long Branch. The river then flows through Reynolds Pond (125 acres) and accepts drainage from Bradley Mill Branch, Joyce Branch, Redds Branch, Clearwater Branch, Chavous Branch, and Cedar Branch (Cedar Lake). There are a total of 200.9 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Shaw Creek - There are three SCDHEC monitoring sites along Shaw Creek. Aquatic life uses are fully supported at the upstream site based on macroinvertebrate community data, although habitat degradation due to sedimentation was evident. Aquatic life and recreational uses are fully supported at both the midstream and downstream sites. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, and not standards violations. A high concentration of zinc was measured at the midstream site in 1992.

Water Supply

WATER USER (TYPE)
CITY OF AIKEN (M)

STREAM
SHAW CREEK

AMOUNT WITHDRAWN (MGD)
7.13

Point Source Contributions

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
SHAW CREEK KENTUCKY TENNESSEE CLAY CO. PIPE #: 001 FLOW: M/R MINE DEWATERING	SC0003891 MINOR INDUSTRIAL EFFLUENT
SHAW CREEK CITY OF AIKEN/SHAW CREEK WATER TRT PLT PIPE #: 001 FLOW: M/R	SC0038270 MINOR INDUSTRIAL EFFLUENT
PACES BRANCH ECW&SA/TRENTON CITY PIPE #: 001 FLOW: 0.073 WQL FOR NH3-N, DO, TRC	SC0025682 MINOR MUNICIPAL WATER QUALITY
JOYCE BRANCH ECC AMERICA, INC./PAYNE MINE PIPE #: 001 FLOW: 0.120 MINE DEWATERING	SC0042552 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

Shaw Creek has been added to the §319 list due to sedimentation adversely affecting macroinvertebrate communities.

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
CITY OF AIKEN LANDFILL DOMESTIC	DWP-037 CLOSED

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
EC CULBREATH & SON, INC. CULBREATH ASPHALT PLANT	0152-02 SAND
FELDSPAR PRODUCTS, INC. EUREKA MINE #1	0821-02 SAND
KENTUCKY TENNESSEE CLAY CO. SMITH MINE	0452-02 KAOLIN
KENTUCKY TENNESSEE CLAY CO. ALEXANDER-RAMEY MINE	0080-02 KAOLIN
ECC AMERICA, INC.	0792-02

PAYNE MINE

KAOLIN

UNITED CATALYSTS
PROTHRO MINE

0824-02
KAOLIN

Growth Potential

There is a high potential for commercial growth surrounding the interchanges of Interstate 20 and U.S. Highway 1 and S.C. Highway 19; both Highways 1 and 19 have plans for widening to four lanes. Highway 19 runs through the City of Aiken and intersects with several rail lines that would increase industrial potential. The Town of Trenton would be able to tie into the proposed Edgefield County Water and Sewer Authority's Regional Sewer Collection System project that would connect with the Horse Creek Valley WWTP. Connection to this system would also enhance industrial growth.

03050204-030

(South Fork Edisto River)

General Description

Watershed 03050204-030 is located in Aiken, Barnwell, and Orangeburg Counties and consists primarily of the ***South Fork Edisto River*** and its tributaries from Shaw Creek to Dean Swamp Creek. The watershed occupies 77,505 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Lakeland-Troup-Varina-Dothan series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.92% urban land, 19.90% agricultural land, 27.55% scrub/shrub land, 0.03% barren land, 40.61% forested land, 10.76% forested wetland (swamp), and 0.22% water.

As a reach of the South Fork Edisto River, this watershed accepts the drainage from all streams entering the river upstream. This section of the South Fork Edisto River also accepts drainage from Burcalo Creek, Hunter Branch (Tylers Pond), Pond Branch (Buzzard Branch, Long Branch, Spring Branch), and Yarrow Branch. There are several small recreational ponds in the watershed and a total of 120.5 stream miles, all classified FW. Another natural resource is Aiken State Park, located near the top of the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

South Fork Edisto River - Aquatic life and recreational uses are fully supported in this section of the South Fork Edisto River. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, and not standards violations.

Aiken State Park Cabin Lake - Cabin Lake was treated in 1989, 1990, 1992, 1993, and 1994 by the Water Resources Division of the SCDNR with aquatic herbicides in an attempt to control the aquatic plants that prevent access to the lake for fishing and boating. In addition, grass carp, a biological control agent, was introduced in 1992 at the stocking rate of 20 fish/vegetated acre for a total of 200 fish.

Aiken State Park Swimming Lake -Swimming Lake was treated with herbicides in 1991, 1992, 1993, and 1994 by the SCDNR to provide access for swimming and boating. Grass carp were introduced to the swimming lake in 1993 at the stocking rate of 10 fish/vegetated acre for a total of 30 fish.

Aiken State Park Childs Fishing Lake - Childs Fishing Lake was treated with herbicides in 1991, 1992, 1993, and 1994 by the SCDNR to provide access for bank fishing. Grass carp were also introduced to this lake in 1992, and a total of 20 fish were stocked.

Sanitary Bathing Areas

*RECREATIONAL STREAM
BATHING SITE*

*PERMIT #
STATUS*

SOUTH FORK EDISTO RIVER
AIKEN STATE PARK

02-N09
ACTIVE

Point Source Contributions

There are currently no point source dischargers in this watershed.

Growth Potential

There is a low potential for growth projected for this watershed. A rail line and U.S. Highway 78 run along the western edge of the watershed through the Town of Windsor to the City of Aiken, and provide potential for industrial growth.

03050204-040
(Dean Swamp Creek)

General Description

Watershed 03050204-040 is located in Aiken and Orangeburg Counties and consists primarily of **Dean Swamp Creek** and its tributaries. The watershed occupies 39,708 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Ailey series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 7%, with a range of 0-25%. Land use/land cover in the watershed includes: 2.25% urban land, 20.67% agricultural land, 29.97% scrub/shrub land, 0.12% barren land, 32.47% forested land, 13.91% forested wetland (swamp), 0.02% nonforested wetland (marsh), and 0.60% water.

Dean Swamp Creek originates near the Town of Crossroads, and flows through several millponds before accepting drainage from Jordan Creek, Abrams Branch, and Bratcher Branch. Dean Swamp Creek then flows through Dean Swamp Pond (100 acres) and drains into the South Fork Edisto River. There are several small recreational ponds and a total of 66.8 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Dean Swamp Creek - Aquatic life and recreational uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations.

Point Source Contributions

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
DEAN SWAMP CREEK	SC0026204
TOWN OF WAGENER	MINOR MUNICIPAL
PIPE #: 001 FLOW: 0.130	WATER QUALITY
WQL FOR NH3-N, TRC	

Growth Potential

Some industrial growth is possible due to the rail line that runs along the eastern edge of the watershed from the Town of Springfield to the Towns of Salley and Perry. However, there is a decreasing population trend in the towns located within this watershed.

03050204-050

(South Fork Edisto River)

General Description

Watershed 03050204-050 is located in Barnwell, Orangeburg, and Bamberg Counties and consists primarily of the ***South Fork Edisto River*** and its tributaries from Dean Swamp Creek to its confluence with the North Fork Edisto River. The watershed occupies 169,511 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Varina-Dothan-Johnston-Meggett series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 1.90% urban land, 31.07% agricultural land, 15.21% scrub/shrub land, 0.82% barren land, 32.88% forested land, 17.71% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.39% water.

As a reach of the South Fork Edisto River, this watershed accepts the drainage from all streams entering the river upstream. Spur Branch enters the river at the top of the watershed, followed by Whaley Creek (Matthews Millpond), Dry Branch, and the Goodland Creek watershed (03050204-060). Further downstream, Windy Hill Creek (Sheepford Branch) enters the river near the Town of Blackville, followed by Rocky Swamp Creek (Campbell Branch, Pleasant Branch), Rogers Branch, Snake Branch, and Little River (Willow Swamp) near the Town of Norway. Sykes Swamp enters the river next, followed by Hays Mill Creek (Stout Creek), Scratchnose Swamp (Reed Branch), Sucksand Branch, and the Roberts Swamp watershed (03050204-070). Snake Swamp (Sam Branch) and Isaac Jennings Canal flow past the Town of Cope at the base of the watershed to enter the river. There are a total of 502.3 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

South Fork Edisto River - Aquatic life uses are fully supported in this section of the South Fork Edisto River, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. Significantly increasing trends in total phosphorus and turbidity were also noted. Recreational uses are fully supported, but a significantly increasing trend in fecal coliform bacteria concentration warrants attention. The above trends are most likely a result of nonpoint source runoff.

Point Source Contributions

The South Fork Edisto River is included on the Section 303(d) list (low priority) of waters that may require development of a TMDL in relation to potential ammonia toxicity.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
SOUTH FORK EDISTO RIVER TOWN OF BAMBERG PIPE #: 001 FLOW: 2.0 PROPOSED FACILITY; WQL FOR TRC	PROPOSED MAJOR MUNICIPAL WATER QUALITY
SOUTH FORK EDISTO RIVER TOWN OF BLACKVILLE PIPE #: 001 FLOW: 0.8 PROPOSED FACILITY	PROPOSED MINOR MUNICIPAL EFFLUENT
SOUTH FORK EDISTO RIVER TOWN OF SPRINGFIELD/PLANT #1 PIPE #: 001 FLOW: 0.120	SC0023272 MINOR MUNICIPAL EFFLUENT
SOUTH FORK EDISTO RIVER SCE&G/COPE POWER PLANT PIPE #: 001 FLOW: 4.36 PROPOSED FACILITY; WQL FOR TRC	SC0045772 MINOR INDUSTRIAL WATER QUALITY
SPUR BRANCH DIXIE-NARCO/DIV. OF MAYTAG PIPE #: 001 FLOW: M/R WQL FOR BOD5; NON-CONTACT COOLING WATER	SC0037435 MINOR INDUSTRIAL WATER QUALITY
WINDY HILL CREEK TOWN OF BLACKVILLE PIPE #: 001 FLOW: 0.80 WQL FOR NH3-N, DO, TRC, BOD5	SC0026417 MINOR MUNICIPAL WATER QUALITY
WINDY HILL CREEK TOWN OF BLACKVILLE PIPE #: 001 FLOW: 0.33 WQL FOR NH3-N, DO, TRC, BOD5	SC0026417 MINOR MUNICIPAL WATER QUALITY
WILLOW SWAMP HUNTER-KINARD-TYLER SCHOOL PIPE #: 001 FLOW: 0.016 WETLAND; WQL FOR TRC; TO BE ELIMINATED	SC0033723 MINOR COMMUNITY WATER QUALITY
WILLOW SWAMP TOWN OF NORWAY PIPE #: 001 FLOW: 0.165 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0045993 MINOR MUNICIPAL WATER QUALITY

Nonpoint Source Contributions

The South Fork Edisto River is included on the §319 list of watersheds targeted for implementation action due to agricultural activities. Water samples collected by the Department indicate scattered elevated levels of turbidity, total phosphorus, and fecal coliform.

Growth Potential

Slight increases in commercial growth would be possible with the proposed widening of U.S. Highway 78, which runs from the Town of Denmark to the Town of Bamberg. Industrial growth is possible due to the rail lines already in place. One rail line runs from the Town of Blackville to the Town of Springfield, and the another from Denmark to the Town of Norway and on upstate to the City of Columbia. U.S. Highway 321 parallels the rail line that bisects the watershed. U.S. Highway 601 crosses at the base of the watershed from Bamberg to the City of Orangeburg. The Town of Denmark shows declining population trends, but the Town of Bamberg shows slightly increasing population growth. The SCE&G Cope Power Plant, currently under construction near the Town of Cope (03050204-070), could boost residential and commercial growth in the area, primarily for the Town of Bamberg. The plant is scheduled for operation in 1996.

03050204-060

(*Goodland Creek*)

General Description

Watershed 03050204-060 is located in Orangeburg and Aiken Counties and consists primarily of *Goodland Creek* and its tributaries. The watershed occupies 25,539 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Troup series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 4%, with a range of 0-10%. Land use/land cover in the watershed includes: 0.02% urban land, 30.88% agricultural land, 16.22% scrub/shrub land, 0.71% barren land, 38.54% forested land, 13.17% forested wetland (swamp), and 0.47% water.

Goodland Creek flows through Capers Mill Pond and accepts drainage from Gin Branch and Tampa Creek before draining into the South Fork Edisto River. There are a total of 62.1 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Goodland Creek - Aquatic life and recreational uses are fully supported; however, a significantly increasing trend in turbidity was noted, most likely due to nonpoint source runoff.

Point Source Contributions

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
GOODLAND CREEK TOWN OF SPRINGFIELD/PLANT #2 PIPE #: 001 FLOW: 0.06	SC0023281 MINOR MUNICIPAL EFFLUENT

Nonpoint Source Contributions

Goodland Creek is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department indicate scattered elevated levels of total phosphorus, turbidity, and fecal coliform. Computer modelling indicates a high potential for NPS problems from agricultural activities for this stream.

Growth Potential

There is a low potential for growth in this watershed.

03050204-070

(Roberts Swamp)

General Description

Watershed 03050204-070 is located in Orangeburg County and consists primarily of **Roberts Swamp** and its tributaries. The watershed occupies 23,237 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Dothan-Fuquay-Noboco series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.02% urban land, 38.07% agricultural land, 6.15% scrub/shrub land, 0.99% barren land, 42.58% forested land, 11.32% forested wetland (swamp), and 0.87% water.

Roberts Swamp flows through Twin Lakes and accepts drainage from Deadfall Swamp and Twomile Swamp, before flowing past the Town of Cope and into the South Fork Edisto River (03050204-050). There are a total of 63.9 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Roberts Swamp - Aquatic life use are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Roberts Swamp is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Roberts Swamp is also being added to the §319 list due to elevated levels of fecal coliform.

Growth Potential

The SCE&G Cope Power Plant, currently under construction near the Town of Cope, may provide some growth in the watershed. The plant is scheduled for operation in 1996.

03050206-010
(Four Hole Swamp)

General Description

Watershed 03050206-010 is located in Orangeburg and Calhoun Counties and consists primarily of **Four Hole Swamp** and its tributaries from its origin to Bull Swamp. The watershed occupies 54,161 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Dothan-Rains-Wagram-Lakeland series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 2.52% urban land, 38.88% agricultural land, 10.15% scrub/shrub land, 1.17% barren land, 29.58% forested land, 17.21% forested wetland (swamp), and 0.48% water.

This section of Four Hole Swamp originates near the Town of St. Matthews and flows through Bull Pond before accepting drainage from Bay Branch, Flea Bite Creek, Cook Branch, Gin Branch, and Bull Swamp (Little Bull Creek, Gramling Creek, Little Bull Swamp). There are a total of 93.5 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Four Hole Swamp - Aquatic life uses may be threatened in this section of Four Hole Swamp due to a high concentration of chromium measured in 1991, and a very high concentration of zinc measured in 1990. A significantly declining trend in pH and a significantly increasing trend in turbidity were also noted. In the 1992 sediment sample, the insecticides beta-benzenehexachloride and endosulfan were detected along with derivatives of DDT (P,P'DDT; P,P'DDD; and P,P'DDE). The use of DDT was banned in 1973, but it is very persistent in the environment. Recreational uses were only partially supported due to fecal coliform bacteria excursions under Class FW standards.

Little Bull Creek - Aquatic life uses are fully supported, although a significantly declining trend in pH and a significantly increasing trend in turbidity were noted. In the 1989 sediment samples, very high concentrations of chromium, mercury, nickel, and zinc were measured. Recreational uses were only partially supported due to fecal coliform bacteria excursions under Class FW standards.

Gramling Creek - Aquatic life uses are not supported due to dissolved oxygen excursions; however, since this is a secondary monitoring station, sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly declining trend in pH and a significantly increasing trend in turbidity were also noted. Recreational uses were only partially supported due to fecal coliform bacteria

excursions under Class FW standards, however a significantly declining trend in fecal coliform bacteria concentrations suggests improving conditions.

Point Source Contributions

This section of Four Hole Swamp is included on the §303(d) low priority list of waters which may require TMDL development due to concerns for toxics, nutrients, and ammonia toxicity. Gramling Creek is included on the Section 303(d) high priority list of waters targeted for TMDL development in relation to elevated levels of fecal coliform and turbidity. Gramling Creek and Little Bull Creek are included on the §304(l) long list of impacted waterbodies due to concerns for non-§307(a) toxic pollutants.

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION (EF/WQ)</i>
FOUR HOLE SWAMP WESTVACO CORP./KRAFT DIV PIPE #: 001 FLOW: MR	SC0044857 MINOR INDUSTRIAL EFFLUENT
GRAMBLING CREEK ROOSEVELT GARDEN APTS PIPE #: 001 FLOW: 0.0676	SC0029645 MINOR MUNICIPAL WATER QUALITY
GRAMBLING CREEK AMERICAN YARD PRODUCTS PIPE #: 001 FLOW: 0.043 RECIRCULATING NON-CONTACT COOLING WATER	SC0038679 MINOR INDUSTRIAL EFFLUENT
GRAMBLING CREEK EMRO MKTG/PORT OIL #284 PIPE #: 001 FLOW: ---- WQL FOR TOXICS	SC0041424 MINOR INDUSTRIAL WATER QUALITY
LITTLE BULL CREEK COOPER TOOL PIPE #: 001 FLOW: ---- NON-CONTACT COOLING WATER	SC0025941 MINOR INDUSTRIAL EFFLUENT
<i>LAND APPLICATION FACILITY NAME</i>	<i>PERMIT # TYPE</i>
TILE FIELD EASTWOOD SD	ND0067288 MINOR COMMUNITY

Nonpoint Source Contributions

Four Hole Swamp is included on the §319 list of waters targeted for further evaluation due to agricultural and construction activities. Data from outside agencies and water samples collected by the Department from Four Hole Swamp indicate scattered elevated levels of toxic materials (metals, pesticides, organics), pH, turbidity, and fecal coliform. Computer modelling indicates a high potential for NPS problems from agriculture activities for this stream. Four Hole Swamp and Gramling Creek are included on the §304(l)

long list for waters impacted by nontoxic pollutants. Gramling Creek is also included on the Section 303(d) high priority list of waters targeted for TMDL development in relation to elevated levels of fecal coliform and turbidity. Water samples collected from Gramling Creek by the Department indicate numerous dissolved oxygen excursions and scattered elevated levels of fecal coliform, pH, and turbidity. Little Bull Creek has been added to the §319 list due to elevated levels of fecal coliform, turbidity, pH, and toxic materials (metals).

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
BLUE CIRCLE CEMENT CO.	0206-38
JAMISON CLAY PIT	CLAY
T&N ENTERPRISES	0942-38
ELLOREE MINE	CLAY

Growth Potential

Interstate 26 bisects the watershed with interchanges at U.S. Highway 601 and S.C. Highway 33 and should encourage some growth around the interchanges. Rail lines parallel Highways 601 and 33, all of which run out of the City of Orangeburg. U.S. Highway 176 parallels I-26 and runs through the Town of Cameron.

03050206-020
(Four Hole Swamp)

General Description

Watershed 03050206-020 is located in Orangeburg and Calhoun Counties and consists primarily of **Four Hole Swamp** and its tributaries from Bull Swamp to Cow Castle Creek. The watershed occupies 68,276 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Goldsboro-Hobcaw-Lynchburg-Mouzon series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 3.95% urban land, 36.37% agricultural land, 9.80% scrub/shrub land, 2.05% barren land, 31.20% forested land, 16.41% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.22% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp also accepts drainage from Middle Pen Swamp, Polk Spring Creek, Indian Camp Branch, Goodbys Swamp (Keller Branch), Mill Branch, and Bush Branch. There are a total of 190.8 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Four Hole Swamp - Although a dissolved oxygen excursion occurred, due to the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are also fully supported.

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
MIDDLE PEN SWAMP DITCH DAYS INN/ORANGEBURG PIPE #: 001 FLOW: 0.20 WQL FOR NH3-N, DO, TRC, BOD5	SC0024422 MINOR COMMUNITY WATER QUALITY
MIDDLE PEN SWAMP DITCH NORTHWOOD ESTATES/MID-CAROLINA PIPE #: 001 FLOW: 0.3136 WQL FOR NH3-N, DO, TRC, BOD5	SC0030937 MINOR COMMUNITY WATER QUALITY
MIDDLE PEN SWAMP BROOKLAND PLANTATION HOME PIPE #: 001 FLOW: 0.009	SC0032671 MINOR COMMUNITY EFFLUENT

Nonpoint Source Contributions

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

BLUE CIRCLE CEMENT CO.
BLUE CIRCLE CLAY PIT

0939-38
CLAY

Growth Potential

Interstate 26 crosses this watershed and should promote some growth around the interchange of U.S. Highway 301 out of the City of Orangeburg. U.S. Highway 176 also crosses Highway 301 as it parallels I-26.

03050206-030
(Cow Castle Creek)

General Description

Watershed 03050206-030 is located in Orangeburg County and consists primarily of *Cow Castle Creek* and its tributaries. The watershed occupies 50,226 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Lynchburg-Rains series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 3.29% urban land, 23.03% agricultural land, 8.60% scrub/shrub land, 1.25% barren land, 51.37% forested land, 12.41% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.03% water.

Cow Castle Creek originates near the City of Orangeburg and accepts drainage from Crum Branch, Buck Branch, and Patrick Branch before flowing into Four Hole Swamp. There are a total of 100.5 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Cow Castle Creek - Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards. This creek was Class B until April, 1992 and bacterial conditions are expected to improve as new NPDES permit limits are instituted in the watershed.

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
COW CASTLE CREEK TOWN OF BOWMAN PIPE #: 001 FLOW: 0.15 WQL FOR NH3-N	SC0040037 MINOR MUNICIPAL WATER QUALITY
BUCK BRANCH TRIB SIMS-BRAILSFORD PARTNERSHIP PIPE #: 001 FLOW: 2.0 PROPOSED FACILITY	SC0043061 MINOR INDUSTRIAL EFFLUENT

Growth Potential

Interstate 26 crosses this watershed and should promote some growth around the two interchanges near the Town of Bowman. U.S. Highway 178 parallels I-26 and runs through Bowman. At the top of the watershed, a growth corridor runs from the City of Orangeburg to the Town of Rowesville along U.S. Highway 21, as does a rail line.

03050206-040
(Four Hole Swamp)

General Description

Watershed 03050206-040 is located in Orangeburg and Dorchester Counties and consists primarily of **Four Hole Swamp** and its tributaries from Cow Castle Creek to Dean Swamp. The watershed occupies 64,969 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Rains-Lynchburg-Hobcaw series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.07% urban land, 17.73% agricultural land, 14.46% scrub/shrub land, 51.03% forested land, 15.20% forested wetland (swamp), 0.14% nonforested wetland (marsh), and 0.37% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp also receives drainage from the Cow Castle Creek watershed (03050206-030) and the Providence Swamp watershed (03050206-050). Target Swamp enters this watershed downstream of the Providence Swamp drainage followed by Spring Branch and Mill Branch. Further downstream Huttos Lake and Rowser Lake drain into Four Hole Swamp. Home Branch originates near the Town of Holly Hill and flows past the Town of Four Holes before entering the swamp. Mill Run and Dam Branch drain into the swamp at the base of the watershed. There are a total of 168.8 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Four Hole Swamp - Although a dissolved oxygen excursion occurred, due to the small number of samples, aquatic life uses are considered to be fully supported in this section of Four Hole Swamp. A high concentration of zinc was measured in 1992 at this site. Recreational uses are also fully supported.

Water Supply

WATER USER (TYPE)	STREAM	AMOUNT WITHDRAWN (MGD)
GIANT CEMENT CO. (I) HARLEYVILLE PLT.	FOUR HOLE SWAMP	4.608

Point Source Contributions

Four Hole Swamp and Home Branch are included on the §304(l) long list for impacted waterbodies due to concerns for nontoxic pollutants.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
FOUR HOLE SWAMP GA PACIFIC/HOLLY HILL PIPE #: 001 FLOW: 0.021 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0001147 MINOR INDUSTRIAL WATER QUALITY
FOUR HOLE SWAMP GA PACIFIC/HOLLY HILL PIPE #: 002 FLOW: 0.660 WETLAND; FIBERBOARD COOLING WATER	SC0001147 MINOR INDUSTRIAL EFFLUENT
FOUR HOLE SWAMP GA PACIFIC/HOLLY HILL PIPE #: 003 FLOW: 0.038 WETLAND; FIBERBOARD COOLING WATER	SC0001147 MINOR INDUSTRIAL EFFLUENT
FOUR HOLE SWAMP GIANT CEMENT CO. PIPE #: 001 FLOW: 0.020 WETLAND; COOLING WATER; QUARRY WASH WATER	SC0022667 MINOR INDUSTRIAL EFFLUENT
FOUR HOLE SWAMP GIANT CEMENT CO. PIPE #: 002 FLOW: 1.225 WETLAND; COOLING WATER; QUARRY WASH WATER	SC0022667 MINOR INDUSTRIAL EFFLUENT
HOME BRANCH HOLNAM, INC. PIPE #: 001 FLOW: 7.280 WETLAND; COOLING WATER	SC0002992 MINOR INDUSTRIAL EFFLUENT
HOME BRANCH HOLNAM INC. PIPE #: 001A FLOW: 0.002 WETLAND; COOLING WATER	SC0002992 MINOR INDUSTRIAL EFFLUENT
HOME BRANCH TRIB FARMERS PETROLEUM CO. PIPE #: 001 FLOW: ---- WQL FOR BOD5, TOXICS	SC0044008 MINOR INDUSTRIAL WATER QUALITY
UNNAMED POND GIANT CEMENT CO. PIPE #: 003 FLOW: ---- PROPOSED FACILITY	SC0022667 MINOR INDUSTRIAL EFFLUENT
UNNAMED POND GIANT CEMENT CO. PIPE #: 004 FLOW: ---- PROPOSED FACILITY	SC0022667 MINOR INDUSTRIAL EFFLUENT

***LAND APPLICATION
FACILITY NAME***

SPRAY IRRIGATION
CITY OF HOLLY HILL

***PERMIT #
TYPE***

ND0063389
MINOR MUNICIPAL

Nonpoint Source Contributions

Mining Activities

***MINING COMPANY
MINE NAME***

HOLNAM, INC.
MARL & CLAY QUARRY

***PERMIT #
MINERAL***

0054-38
LIMESTONE

Growth Potential

Interstates 95 and 26 cross in this watershed and should promote some growth around the following interchanges: I-95 & I-26, I-95 & U.S. Highway 178, and I-26 & S.C. Highway 15; U.S. Highway 176 crosses a rail line in the City of Holly Hill.

03050206-050
(Providence Swamp)

General Description

Watershed 03050206-050 is located in Orangeburg County and consists primarily of **Providence Swamp** and its tributaries. The watershed occupies 19,933 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Goldsboro-Dothan-Noboco-Hobcaw series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.03% urban land, 51.89% agricultural land, 14.28% scrub/shrub land, 30.83% forested land, 2.74% forested wetland (swamp), 0.09% nonforested wetland (marsh), and 0.14% water.

The Providence Swamp accepts drainage from White Cane Branch, Cantey Branch (Ball Branch), Buck Branch, Jack Branch, and the Horse Range Swamp watershed (03050206-055) before flowing into Four Hole Swamp. There are a total of 73.2 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Providence Swamp - Aquatic life uses may be threatened due to a high concentration of copper measured in 1989, and high concentrations of zinc measured in 1988 and 1989. Recreational uses are only partially supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Providence Swamp is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department from this stream indicate elevated levels of fecal coliform and toxic materials (metals) on numerous occasions. Providence Swamp is included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

There is a low potential for growth in this watershed; however, I-95 crosses the watershed and some growth may occur around the interchanges of I-95 & U.S. Highway 176 and I-95 & U.S. Highway 15.

03050206-055
(Horse Range Swamp)

General Description

Watershed 03050206-055 is located in Orangeburg County and consists primarily of **Horse Range Swamp** and its tributaries. The watershed occupies 13,307 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Rains-Lynchburg-Dothan series. The erodibility of the soil (K) averages 0.18; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.01% urban land, 36.14% agricultural land, 24.07% scrub/shrub land, 38.14% forested land, 1.37% forested wetland (swamp), 0.14% nonforested wetland (marsh), and 0.13% water.

Kettle Branch and Bachelor Branch flow into Horse Range Swamp, which drains into Providence Swamp. There are a total of 23.2 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Horse Range Swamp - Although a dissolved oxygen excursion occurred, due to the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

**LAND APPLICATION
FACILITY NAME**

TILE FIELD
I-95 TRUCK STOP

**PERMIT #
TYPE**

ND0067130
MINOR COMMUNITY

Nonpoint Source Contributions

Horse Range Swamp is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Horse Range Swamp is also being added to the §319 list due to elevated levels of fecal coliform.

Growth Potential

There is a low potential for growth in this watershed.

03050206-060

(Dean Swamp)

General Description

Watershed 03050206-060 is located in Orangeburg and Berkeley Counties and consists primarily of *Dean Swamp* and its tributaries. The watershed occupies 71,021 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Hobcaw series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.39% urban land, 17.10% agricultural land, 17.03% scrub/shrub land, 0.03% barren land, 55.63% forested land, 9.28% forested wetland (swamp), 0.32% nonforested wetland (marsh), and 0.21% water.

Sandy Run (Moon Savanna) originates near the Town of Eutawville and accepts the drainage of Cedar Swamp (Toney Bay) before merging with Black Creek (Little Black Creek) to form Dean Swamp, which also accepts the drainage of Briner Branch before draining into Four Hole Swamp. There are a total of 156.7 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Dean Swamp - Although a dissolved oxygen excursion occurred, due to the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
SANDY RUN SOUTHERN AGGREGATES PIPE #: 001 FLOW: ----	SC0042862 MINOR INDUSTRIAL EFFLUENT
BRINER BRANCH CHEVRON FOOD MART/HOLLY HILL PIPE #: 001 FLOW: ---- WQL FOR BOD5, TOXICS	SC0043087 MINOR INDUSTRIAL WATER QUALITY

Nonpoint Source Contributions

Dean Swamp is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Dean Swamp has also been added to the §319 list due to elevated levels of fecal coliform.

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
MARTIN MARIETTA AGGREGATES BERKELEY QUARRY	0098-08 LIMESTONE
SOUTHERN AGGREGATES ORANGEBURG QUARRY	0802-38 LIMESTONE

Growth Potential

There is a low potential for growth in this watershed. A rail line and S.C. Highway 453 runs from the City of Holly Hill to the Town of Eutawville. This road is bisected by U.S. Highway 176 in the City of Holly Hill.

03050206-070
(Four Hole Swamp)

General Description

Watershed 03050206-070 is located in Dorchester and Berkeley Counties and consists primarily of **Four Hole Swamp** and its tributaries from Dean Swamp to its confluence with the Edisto River. The watershed occupies 91,240 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Hobcaw-Mouzon-Albany-Daleville-Rains series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.62% urban land, 10.17% agricultural land, 12.70% scrub/shrub land, 0.20% barren land, 59.25% forested land, 15.15% forested wetland (swamp), 0.41% nonforested wetland (marsh), and 0.49% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp accepts drainage from Merkel Branch (Lake Merkel), Santee Branch (Rock Branch), and Walnut Branch (Coldwater Branch, Little Walnut Branch, Cane Branch, Crawford Branch, Lang Branch, Deep Branch, Marshall Branch) near the Town of Dorchester. Halfway Gut Creek enters the swamp next, followed by Timothy Creek, which flows past the Town of Ridgeway. Powder Horn Branch drains into the swamp at the base of the watershed. There are a total of 197.6 stream miles in this watershed, all classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5). The Francis Beidler Forest, a nature preserve, is another natural resource in the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Four Hole Swamp - There are two SCDHEC monitoring sites along this section of Four Hole Swamp, and aquatic life and recreational uses are fully supported at both sites. A significantly increasing trend in fecal coliform bacteria concentrations warrants attention at the upstream site. Fecal coliform bacteria excursions occurred at the downstream site, but due to the small number of samples, support status was not affected.

Point Source Contributions

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
TIMOTHY CREEK	SC0038555
SHOWA DENKO CARBON INDUSTRIES	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: 0.27	WATER QUALITY
WETLAND; WQL FOR DO, TRC	

***LAND APPLICATION
FACILITY NAME***

SPRAY FIELD
McDOUGALL YOUTH CENTER

***PERMIT #
TYPE***

ND0074098
MINOR COMMUNITY

Nonpoint Source Contributions

Four Hole Swamp is included on the §319 list of waters targeted for further evaluation due to agricultural and construction activities. Water samples collected by the Department from Four Hole Swamp indicate scattered elevated levels of fecal coliform. Computer modelling indicates a high potential for NPS problems from agriculture activities for this stream. Four Hole Swamp is included on the §304(l) long list for waters impacted by nontoxic pollutants.

Landfill Activities

***SOLID WASTE LANDFILL NAME
FACILITY TYPE***

***PERMIT #
STATUS***

SANDY PINES
SPECIAL WASTE

SCAMP-0001
ACTIVE

CHAMBERS OAKRIDGE
MUNICIPAL

DWP-130
ACTIVE

OLD DORCHESTER COUNTY (5-6 SITES)
MUNICIPAL

DWP-080
CLOSED

Mining Activities

***MINING COMPANY
MINE NAME***

***PERMIT #
MINERAL***

TS SMALLS, INC.
HIGHWAY 27 PIT

0475-08
SAND/CLAY

BLUE CIRCLE CEMENT CO.
HARLEYVILLE QUARRY

0110-18
LIMESTONE

GIANT CEMENT CO.
HARLEYVILLE MINE

0120-18
LIMESTONE

DORCHESTER MINING, INC.
DORCHESTER MINE

0923-18
SAND/CLAY

CHAMBERS OAKRIDGE LANDFILL, INC.
DORCHESTER DIRT PIT

0530-18
SAND/CLAY

MORGAN CORPORATION
MORGAN MINE

1000-18
SAND/CLAY

ACD, A PARTNERSHIP
RIDGEVILLE MINE

0870-18
CLAY

Growth Potential

Interstate 26 bisects this watershed and some growth may occur near the interchanges at the Towns of Harleyville and Ridgeville. A rail line and U.S. Highway 178/78 parallels I-26; another rail line crosses Highway 78 at S.C. Highway 453.

03050205-010

(*Edisto River*)

General Description

Watershed 03050205-010 is located in Bamberg, Orangeburg, Dorchester, and Colleton Counties and consists primarily of the *Edisto River* and its tributaries, from its origin to Cattle Creek. The watershed occupies 90,852 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Johnston-Lumbee series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.34% urban land, 9.56% agricultural land, 13.14% scrub/shrub land, 0.54% barren land, 55.78% forested land, 20.35% forested wetland (swamp), 0.09% nonforested wetland (marsh), and 0.19% water.

The headwaters of the Edisto River are formed from the confluence of the North Fork Edisto River and the South Fork Edisto River near the Town of Bamberg. This section of the Edisto River accepts drainage from Betty Branch (Staley Branch, Mill Branch), Broad Branch, Pen Branch, Brier Creek, Bush Branch, and Box Branch. There are a total of 295.2 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Edisto River - There are two SCDHEC monitoring sites along this section of the Edisto River. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. Aquatic life uses are fully supported at the upstream site, although a significantly increasing trend in turbidity was noted, most likely due to nonpoint source runoff. A high concentration of zinc was measured at this site in 1988, and a derivative of DDT (P,P'DDD) was detected in 1992. The use of DDT was banned in 1973. Recreational uses are fully supported, but a significantly increasing trend in fecal coliform bacteria concentrations warrants attention. Aquatic life and recreational uses are fully supported at the downstream site.

Point Source Contributions

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
PEN BRANCH	SC0021113
TOWN OF BRANCHVILLE	MINOR MUNICIPAL
PIPE #: 001 FLOW: 0.150	WATER QUALITY
WQL FOR NH3-N, DO, TRC, BOD5	

Nonpoint Source Contributions

The Edisto River is included on the §319 list of watersheds targeted for further evaluation due to agricultural activities. Water samples collected by the Department indicate scattered elevated levels of turbidity, fecal coliform, and toxic materials (metals, pesticides). The Edisto River is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

PALMETTO SAND COMPANY
BRANCHVILLE MINE #1

0401-38
SAND

Growth Potential

There is a low to moderate potential for growth in this watershed. The Town of Branchville is located in the center of the watershed with U.S. Highway 78 and a rail line connecting it to the Towns of Bamberg and St. George, and U.S. Highway 21 and another rail line connecting it to the City of Orangeburg. The infrastructure is in place, but census data shows a 37% decline in population over the last decade.

03050205-020

(Cattle Creek)

General Description

Watershed 03050205-020 is located in Orangeburg and Dorchester Counties and consists primarily of **Cattle Creek** and its tributaries. The watershed occupies 35,551 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.02% urban land, 13.95% agricultural land, 5.50% scrub/shrub land, 0.62% barren land, 55.39% forested land, 24.51% forested wetland (swamp), and 0.02% water.

Cattle Creek originates near the Town of Bowman and accepts drainage from Sandy Run, Murray Branch, Mill Branch, and Big Branch before flowing into the Edisto River. There are a total of 85.5 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Cattle Creek - Although a dissolved oxygen excursion occurred, due to the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

Cattle Creek is included on the §303(d) high priority list of waters targeted for TMDL development in relation to elevated fecal coliform concentrations. Cattle Creek is also being added to the §319 list due to elevated levels of fecal coliform.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

DORCHESTER COUNTY
HARTZOG PIT

0412-18
SAND/CLAY

Growth Potential

There is a low potential for growth in this watershed.

03050205-030

(*Edisto River*)

General Description

Watershed 03050205-030 is located in Colleton and Dorchester Counties and consists primarily of the *Edisto River* and its tributaries from Cattle Creek to Indian Field Swamp. The watershed occupies 43,241 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chipley-Rains-Leon-Hobcaw-Lynchburg series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.00% urban land, 11.48% agricultural land, 22.36% scrub/shrub land, 0.78% barren land, 47.69% forested land, 14.28% forested wetland (swamp), 1.19% nonforested wetland (marsh), and 1.21% water.

As a reach of the Edisto River, this watershed accepts the drainage from all streams entering the river upstream. This section of the Edisto River flows past Colleton State Park and accepts the drainage of Brickhouse Branch, Crooked Creek, and Skull Branch. There is a 90-acre lake owned by SCE&G for recreation on Crooked Creek. There are a total of 199.2 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Edisto River - There are two SCDHEC monitoring sites along this section of the Edisto River. Aquatic life uses are fully supported at the upstream site. Although pH excursions occurred, they were typical of values seen in blackwater systems and as such were considered natural conditions, not standards violations. A significantly decreasing trend in pH, and a significantly increasing trend in turbidity were noted at this site. The turbidity is most likely due to nonpoint source runoff. Recreational uses are only partially supported due to fecal coliform bacteria excursions, compounded by a significantly increasing trend in fecal coliform bacteria concentrations. At the downstream site, although there were dissolved oxygen, pH, and fecal coliform bacteria excursions, due to the small number of samples, aquatic life and recreational uses are considered to be fully supported.

Point Source Contributions

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
EDISTO RIVER	SC0002020
SCE&G/CANADYS STATION	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: MR	EFFLUENT
COOLING WATER; FILTER BACKWASH; ASH POND RUNOFF	

Nonpoint Source Contributions

The Edisto River is included on the §319 list of watersheds targeted for further evaluation due to agricultural activities. Water samples collected by the Department, together with information provided from outside agencies, indicated elevated fecal coliform levels on numerous occasions, and scattered excursions of pH and dissolved oxygen, and elevated turbidity levels. The Edisto River is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Growth Potential

There is a low potential for growth projected in this watershed.

03050205-040
(Indian Field Swamp)

General Description

Watershed 03050205-040 is located in Dorchester and Orangeburg Counties and consists primarily of **Indian Field Swamp** and its tributaries. The watershed occupies 101,497 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Lynchburg-Rains-Hobcaw-Mouzon series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 2.06% urban land, 20.49% agricultural land, 15.58% scrub/shrub land, 1.00% barren land, 48.24% forested land, 11.70% forested wetland (swamp), 0.73% nonforested wetland (marsh), and 0.20% water.

Mill Branch and Snell Branch combine to form Indian Field Swamp, which eventually drains into the Edisto River. Downstream from the confluence, Dove Branch and Wadboo Branch enter the swamp, followed by Spring Branch, Big Branch, Tom and Kate Branch, Pineland Branch, Millpond Branch, and Gum Branch. Polk Swamp (Bear Branch, Cowtail Creek) flows past the Town of St. George and drains into Indian Field Swamp at the base of the watershed. There are a total of 242.8 stream miles in this watershed, all classified FW* (Site specific standards - DO not less than 4.0 mg/l, pH between 5.0-8.5 SU).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Indian Field Swamp - Aquatic life and recreational uses are fully supported.

Polk Swamp - There are two SCDHEC monitoring sites along Polk Swamp, which was Class B until April, 1992. Bacterial conditions are expected to improve as new NPDES permit limits are instituted. Aquatic life uses are fully supported at the upstream site, but a significantly decreasing trend in pH was noted. A DO excursion occurred at the downstream site; however, due to the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are not supported at either site due to fecal coliform bacteria excursions under Class FW standards.

Point Source Contributions

RECEIVING STREAM	NPDES#
FACILITY NAME	TYPE
PERMITTED FLOW @ PIPE (MGD)	LIMITATION (EF/WQ)
COMMENT	
TOM AND KATE BRANCH BLUE CIRCLE CEMENT CO. PIPE #: 001 FLOW: 3.0	SC0022586 MINOR INDUSTRIAL EFFLUENT
TOM AND KATE BRANCH	SC0038504

TOWN OF HARLEYVILLE
 PIPE #: 001 FLOW: 0.120
 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5

MINOR MUNICIPAL
 WATER QUALITY

POLK SWAMP
 TOWN OF ST. GEORGE
 PIPE #: 001 FLOW: 0.80
 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5

SC0025844
 MINOR MUNICIPAL
 WATER QUALITY

LAND APPLICATION
FACILITY NAME
COMMENT

PERMIT #
TYPE

SPRAY FIELD
 UPPER DORCHESTER COUNTY
 PROPOSED

ND0074713
 MINOR MUNICIPAL

Nonpoint Source Contributions

Polk Swamp is included on the §319 list of waters impacted by agricultural and urban runoff activities. Water samples collected by the Department indicate elevated fecal coliform levels and excursions of pH and DO on numerous occasions. Polk Swamp is included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

DORCHESTER COUNTY
 JOHN HERBERT PENDARVIS MINE

0742-18
 SAND/CLAY

DORCHESTER COUNTY
 BLITCH MINE

0927-18
 SAND/CLAY

PAUL W. JONES HAULING
 P&M MINE

0950-18
 SAND

SANDERS BROTHERS CONSTRUCTION CO., INC.
 REEVES MINE

0966-18
 SAND

TRULUCK INDUSTRIES
 REEVES-EDISTO MINE

0973-18
 SAND

PALMETTO SAND COMPANY
 INDIAN FIELD CREEK PLANT

0786-18
 SAND

Growth Potential

The Town of St. George lies in the center of this watershed at the intersection of U.S. Highways 78 and 15. Interstate 95 crosses U.S. Highway 78 near the Town of St. George. This interchange area has a high growth potential, particularly if Highway 78 is widened as proposed. The I-95 interchange with U.S. Highway 178 is another growth area. A rail line parallels Highway 78 through St. George and together with the presence of I-95, provides a high industrial growth potential.

03050205-050

(Edisto River)

General Description

Watershed 03050205-050 is located in Dorchester and Colleton Counties and consists primarily of the **Edisto River** and its tributaries from Indian Field Swamp to Four Hole Swamp. The watershed occupies 13,931 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chipley-Ogeechee-Leon-Albany-Rains series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.53% urban land, 10.29% agricultural land, 14.48% scrub/shrub land, 0.38% barren land, 54.89% forested land, 17.70% forested wetland (swamp), 0.42% nonforested wetland (marsh), and 1.31% water.

As a reach of the Edisto River, this watershed accepts the drainage from all streams entering the river upstream. This section of the Edisto River also accepts drainage from Poorly Branch. There are a total of 41.5 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see Description of Watersheds within WMU-0203).

Edisto River - This watershed was inaccessible for monitoring purposes, so the uppermost site in watershed 03050205-060 (Givhans Ferry State Park) was used to represent the water quality of 03050205-050. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural conditions, not standards violations. Aquatic life uses are fully supported; however, a significantly declining trend in pH and a significantly increasing trend in turbidity were noted. The turbidity is most likely due to nonpoint source runoff. A very high concentration of cadmium, and high concentrations of chromium and nickel, were measured in 1988 sediment samples. Recreational uses are only partially supported at this site due to elevated concentrations of fecal coliform bacteria.

Point Source Contributions

There are currently no point source dischargers in this watershed.

Nonpoint Source Contributions

The Edisto River is included on the §319 list of watersheds targeted for further evaluation due to agricultural activities. Water samples collected by the Department, together with information provided from outside agencies, indicated elevated fecal coliform levels on numerous occasions, and scattered elevated levels of turbidity and toxic materials(metals), and pH excursions. The Edisto River is also included on the §304(l) long list for waters impacted by nontoxic pollutants.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

JF CLECKLEY & COMPANY
CLECKLEY MINE #7

0484-18
SAND

TRULUCK INDUSTRIES
GIVHANS PIT

0552-15
SAND

Growth Potential

There is a low potential for growth projected for this watershed.

03050205-060

(Edisto River and South Edisto River)

General Description

Watershed 03050205-060 is located in Colleton, Dorchester, and Charleston Counties and consists primarily of the **Edisto River** and the **South Edisto River** and their tributaries from Four Hole Swamp to the Atlantic Ocean. The watershed occupies 158,453 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bohicket-Chipley-Rains-Chisolm-Yauhannah series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.84% urban land, 3.04% agricultural land, 14.56% scrub/shrub land, 0.08% barren land, 44.66% forested land, 15.13% forested wetland (swamp), 12.16% nonforested wetland (marsh), and 9.52% water.

This lowest reach of the Edisto River receives the drainage from the upper reaches of the Edisto River and Four Hole Swamp. The Dawho River (03050205-070) enters the Edisto River and forms the South Edisto River, which drains into the Atlantic Ocean. There are a total of 206.5 stream miles and 44.4 square miles of estuarine areas in this watershed. The Edisto River is classified FW from its origin downstream to its intersection with U.S. Highway 17, and below this point to its confluence with the Dawho River, the river is classified ORW. Cold Water Branch, Deep Creek (Maple Cane Swamp, Horse Pen Branch), and Sandy Run (Big Bay Swamp, Craven Branch, Boston Branch) drain into the Edisto River at the top of the watershed. Further downstream near the Town of Jacksonboro, the Edisto River accepts drainage from Spooler Swamp, Bull Bridge Creek, Allen Meadow, Penny Creek (Adams Run), Horse Creek, and Ashe Creek.

The South Edisto River is classified ORW from its headwaters to Mud Creek, and below Mud Creek to the Atlantic Ocean the river is classified SFH. Mosquito Creek, Sampson Island Creek, and Alligator Creek are all classified ORW and drain into the upper portion of the South Edisto River. Mosquito Creek connects to the Ashepoo River (Savannah-Salkehatchie Basin) through Bull Cut, and the upper South Edisto River connects to watershed 03050205-070 through the Dawho River and Watts Cut (SFH). Further downstream, St. Pierre Creek accepts drainage from Bailey Creek, Shingle Creek (Milton Creek), Store Creek, and Fishing Creek (Sandy Creek) before draining into the South Edisto River. Big Bay Creek (SFH) enters downstream from Fishing Creek and accepts drainage from Mud Creek (ORW) and Scott Creek (ORW) near The Mound. Scott Creek also drains into the Atlantic Ocean via Jeremy Inlet (SFH).

There are several additional natural resources in the watershed including Givhans Ferry State Park near the top of the watershed, and Edisto Beach State Park at the base of the watershed. There are also numerous ponds and lakes (18-400 acres) owned privately and by the State (S.C. State Forestry Commission) for recreation and wildlife purposes.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of streams within this watershed (see Description of Watersheds within WMU-0203).

Edisto River - There are two SCDHEC monitoring sites along this section of the Edisto River. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural conditions, not standards violations. Aquatic life uses are fully supported at both sites; however, a significantly declining trend in pH and a significantly increasing trend in turbidity were noted. The turbidity is most likely due to nonpoint source runoff. At the upstream site (Givhans Ferry State Park), a very high concentration of cadmium, and high concentrations of chromium and nickel were measured in 1988 sediment samples. Recreational uses are only partially supported at this site due to elevated concentrations of fecal coliform bacteria. At the downstream site, a high concentration of zinc was measured in 1988 water samples. Sediment samples revealed a very high concentration of mercury in 1991 and high concentrations of lead and zinc in 1992. Recreational uses are fully supported.

South Edisto River - Although dissolved oxygen excursions occurred, they were typical of values seen in transitional areas between fresh and salt waters and as such are considered natural conditions, not standards violations. Recreational uses are fully supported.

Water Supply

<i>WATER USER (TYPE)</i>	<i>STREAM</i>	<i>AMOUNT WITHDRAWN (MGD)</i>
WESTVACO CORP./KRAFT DIV.(I)	EDISTO RIVER	36.288
CITY OF CHARLESTON (M)	EDISTO RIVER	45.390

Point Source Contributions

Big Bay Creek is included on the §303(d) low priority list of waters which may require development of a TMDL in relation to fecal coliform concerns. Fishing Creek is also included on the §303(d) low priority list due to both fecal coliform and dissolved oxygen concerns.

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION (EF/WQ)</i>
<i>COMMENT</i>	
SANDY RUN	SC0041971
BECKER MATERIALS INC.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: ---	EFFLUENT

<i>LAND APPLICATION</i>	<i>PERMIT #</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
SPRAY IRRIGATION	ND0063789
TOWN OF EDISTO BEACH/FAIRFIELD	MINOR MUNICIPAL
SPRAY IRRIGATION	ND0071510
JEREMY CAY	MINOR COMMUNITY
SPRAY IRRIGATION	ND0066877
SEASIDE PLANTATION	MINOR COMMUNITY

Nonpoint Source Contributions

The Edisto River and Fishing Creek are included on the §319 list of waters targeted for further evaluation due to agricultural activities. Water samples collected from the Edisto River by the Department, together with information provided from outside agencies, indicate elevated fecal coliform levels on numerous occasions, and scattered elevated levels of turbidity and toxic materials (metals) and pH excursions. The Edisto River is also included on the §304(l) long list for waters impacted by nontoxic pollutants. Information on Fishing Creek, supplied by Department District Engineers, indicates scattered fecal coliform and dissolved oxygen excursions from land disposal systems.

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
BECKER MATERIALS, INC. SANDY RUN MINE	0755-15 SAND
PALMETTO SAND COMPANY HARTZ BLUFF MINE	0620-18 SAND
AMERICAN PEAT & ORGANICS, INC. TI-TI MINE	0173-15 PEAT

Shellfish Harvesting Status

The South Edisto River encompasses 28,292 acres classified as ORW and are approved for shellfish harvesting. The waters of Fishing Creek from its headwaters to Sandy Creek are restricted to harvesting due to elevated fecal coliform levels. Individual sewage treatment and disposal systems (ISTDs) located in the nearby residential areas (189 homes immediately adjacent to shellfish growing waters), together with residential nonpoint source runoff account for the restricted status. Fishing Creek is very narrow and long, and experiences inadequate tidal flushing. Waters prohibited to harvesting include Big Bay Creek from a point 1800 feet north of its confluence with Scott Creek to its confluence with the South Edisto River, and Scott Creek from The Mound to its confluence with Big Bay Creek. The areas are prohibited to shellfish harvesting due to the adjacent Edisto Marina and the Fairfield-Ocean Ridge sprayfield, a total of 530 acres. Prohibited areas adjacent to marinas are not areas of low water quality, but areas where harvesting is prohibited to protect the health of shellfish consumers in case of sewage discharges from boats or other activities at the marinas.

Growth Potential

Population growth within the Town of Edisto Beach has increased and is projected to continue to increase at a rapid pace for the next five years. The new bridge (80 feet high) that spans the Dawho River (Intracoastal Waterway) should aid the influx. Much of the growth is tourism-based and thus elicits primarily seasonal influence on the area. Only a small proportion of the town is sewerred and there are no plans to expand the sewer service area. However, the Town of Edisto Beach will extend sewer lines to serve areas where septic systems have failed (at owner expense). The ORW classification of most of the waters in this

watershed prohibits new point source discharges of wastewater to surface waters. Growth that occurs will have to rely primarily on ISTDs and/or land application systems.

03050205-070

(*North Edisto River*)

General Description

Watershed 03050205-070 is located in Charleston County and consists primarily of the **North Edisto River** and its tributaries. The watershed occupies 113,559 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Yonges-Kiawah-Foxworth-Wadmalaw series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 1.99% urban land, 7.61% agricultural land, 9.86% scrub/shrub land, 0.41% barren land, 38.18% forested land, 2.42% forested wetland (swamp), 18.54% nonforested wetland (marsh), and 21.00% water.

The Dawho River joins with the Wadmalaw River to form the North Edisto River (ORW), which drains into the Atlantic Ocean. There are a total of 71.6 square miles of estuarine areas in this watershed. The Dawho River accepts drainage from the Edisto River watershed (03050205-060), Fishing Creek, and North Creek before merging with the Wadmalaw River. With the exception of North Creek (SFH), all these streams are classified ORW.

Upstream from the confluence, Church Creek (Raven Point Creek) flows into Wadmalaw Sound and is also connected to Bohicket Creek near Hoopstick Island. Also draining into the sound are the Stono River and Oyster House Creek. New Cut connects the Stono River to Church Creek. The Wadmalaw River flows out of Wadmalaw Sound and accepts drainage from Gibson Creek, Toogoodoo Creek (Lower Toogoodoo Creek, Swinton Creek), and Tom Point Creek (also known as McLeod Creek) before merging with the Dawho River. Tom Point Creek is connected to Toogoodoo Creek through Garden Creek. Church Creek is classified ORW from Wadmalaw Sound to Raven Point Creek, and SFH from Raven Point Creek to Hoopstick Island. All the remaining streams are classified ORW.

Downstream from the confluence, Whooping Island Creek (Sand Creek) and Russel Creek join to form Steamboat Creek (Long Creek), which drains into the North Edisto River. Also draining into the North Edisto River are Westbank Creek, Leadenwah Creek, Bohicket Creek (Adams Creek, Fickling Creek), Ocella Creek, South Creek (Townsend River, Frampton Creek), and Privateer Creek. Frampton Creek and Townsend Creek (ORW) also drain directly into the ocean via Frampton Inlet (ORW). The Intracoastal Waterway runs through Watts Cut and North Creek, down the Dawho River, up into the Wadmalaw River, through Wadmalaw Sound, and into the Stono River and the Catawba-Santee Basin.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of streams within this watershed (see Description of Watersheds within WMU-0203).

North Edisto River - Aquatic life uses are fully supported, although a significantly declining trend in pH and a significantly increasing trend in turbidity were noted. The turbidity is most likely due to nonpoint source runoff. Recreational uses are also fully supported.

Dawho River - Aquatic life uses may be threatened due to a very high concentration of zinc measured in 1990, compounded by a significantly declining trend in dissolved oxygen. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural conditions, not standards violations. A significantly declining trend in pH and a significantly increasing trend in turbidity were also noted, the turbidity most likely due to nonpoint source runoff. Sediment samples revealed chlordane in both the 1988 and 1991, and a derivative of DDT (P,P'DDT) in 1991. Also in sediment, a high concentration of copper, and a very high concentration of zinc were measured in 1988. Recreational uses are fully supported.

Church Creek - Aquatic life uses are fully supported, but may be threatened by a significantly declining trend in dissolved oxygen concentration. Although dissolved oxygen excursions occurred, they were typical of values seen in estuarine systems and were considered natural conditions, not standards violations. A significantly declining trend in pH was also noted. Recreational uses are fully supported.

Bohicket Creek - There are two SCDHEC monitoring sites along Bohicket Creek, and a significantly declining trend in pH and an increasing trend in turbidity were noted at both sites. The turbidity is most likely due to nonpoint source runoff. Aquatic life uses are not supported at the upstream site due to DO excursions, compounded by a significantly declining trend in dissolved oxygen. A very high concentration of copper was measured in sediment in 1992. At the downstream site, aquatic life uses are only partially supported due to dissolved oxygen excursions, again compounded by a significantly declining trend in dissolved oxygen. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. Recreational uses are fully supported at both sites.

Point Source Contributions

Church Creek (Raven Point to Hoopstick Island) is included on the §303(d) low priority list of waters which may require development of a TMDL in relation to fecal coliform concerns. Fishing Creek is also included on the §303(d) low priority list due to elevated turbidity.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION (EF/WQ)
NORTH CREEK EDISTO SHRIMP CO. PIPE #: 001 FLOW: 67.0 WQL FOR NH3-N, DO, BOD5	SC0040401 MINOR INDUSTRIAL WATER QUALITY
OYSTER HOUSE CREEK YOUMANS GAS AND OIL PIPE #: 001 FLOW: 0.000005	SC0044270 MINOR INDUSTRIAL EFFLUENT
TOOGOODOO CREEK TRIB BAPTIST HILL HIGH SCHOOL PIPE #: 001 FLOW: 0.01	SC0029386 MINOR COMMUNITY WATER QUALITY

WETLAND; WQL FOR NH3-N, DO, TRC, BOD5

TOM POINT CREEK
LIGHTHOUSE SEAFOOD ATLANTIC
PIPE #: 001 FLOW: 2.1
WETLAND; WQL FOR NH3-N, DO, TRC, BOD5

SC0043249
MINOR INDUSTRIAL
WATER QUALITY

RUSSEL CREEK
SUNBELT SEAFOOD FARM
PIPE #: 001 FLOW: 0.072
WETLAND; WQL FOR NH3-N, DO, TRC, BOD5

SC0041688
MINOR INDUSTRIAL
WATER QUALITY

Nonpoint Source Contributions

The Dawho River is included on the §319 list of waters impacted by agricultural activities. Water samples collected by the Department indicate scattered elevated levels of turbidity and toxic materials (metals, pesticides), and pH and DO excursions. Bohicket Creek is also impacted by agricultural activities together with urban runoff. Water samples collected from Bohicket Creek by the Department indicate scattered elevated levels of turbidity and toxic materials (metals) and excursions of pH and dissolved oxygen. Computer modelling indicates a high potential for NPS problems from agricultural activities and urban runoff. Bohicket Creek is also included on the §304(l) long list for waters impacted by nontoxic pollutants. Church Creek is listed as waters impacted by agricultural activities and land disposal practices. Water samples collected by the Department indicate scattered excursions of pH and dissolved oxygen for Church Creek.

Toogoodoo Creek, an unnamed tributary to Toogoodoo Creek, Lower Toogoodoo Creek, Tom Point Creek, and Russel Creek are all impacted by land disposal systems, and have been added to the §319 list due to elevated levels of fecal coliform bacteria. The North Edisto River has been added to the list due to elevated levels of turbidity and pH excursions.

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

BANKS CONSTRUCTION COMPANY
JOHNS ISLAND #1

0122-10
SAND

LAND ASSOCIATES, INC.
LAND ASSOCIATES SAND MINE

0215-10
SAND/CLAY

WJ ENTERPRISES
LAKE MOLLOY MINE

0610-10
SAND/CLAY

Shellfish Harvesting Status

The North Edisto River encompasses 29,580 acres classified as ORW and is approved for shellfish harvesting. All waters of Toogoodoo Creek, an unnamed tributary to Toogoodoo Creek, Lower Toogoodoo Creek, Tom Point Creek, Russel Creek (from the headwaters to Steamboat Landing), Bohicket Creek (from the prohibited boundary at Bohicket Marina to Hoopstick Island), and Church Creek (from Marker 77 in

Wadmalaw Sound to Raven Point Creek) are restricted to harvesting. Individual sewage treatment and disposal systems (ISTDs) located in the nearby residential areas (60 ISTDs along Toogoodoo and Lower Toogoodoo Creeks, and 65 ISTDs along Bohicket Creek), together with residential and agricultural nonpoint source runoff account for the restricted status. Both Toogoodoo Creek and Bohicket/Church Creek systems experience inadequate tidal flushing and high levels of fecal coliform. The Toogoodoo Creek system also has a heavy domestic animal population along the shoreline.

Three acres in the watershed are prohibited to harvesting due to their proximity to point source dischargers and 82 acres are prohibited due to their proximity to marinas. Prohibited areas adjacent to marinas are not areas of low water quality, but areas where harvesting is prohibited to protect the health of shellfish consumers in case of sewage discharges from boats or other activities at the marinas. Baptist Hills High School is the point source discharging to Lower Toogoodoo Creek. Harvesting prohibition due to marinas includes a 1000 foot radius in Bohicket Creek adjacent to Bohicket Marina, a 1000 foot radius in Adams Creek at the community docks, and a 1000 foot radius in Wadmalaw River at Metal Trades Ship Repair facility. Church Creek, from Ravens Point Creek to Hoopstick Island, is prohibited to harvesting due to elevated fecal coliform levels.

Growth Potential

There is a low potential for growth in this rural agricultural-based watershed. The ORW classification of most of the waters in this watershed prohibits new point source discharges of wastewater to surface waters. Growth that occurs will have to rely on ISTDs and/or land application (ND) systems.

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APPENDIX A. WMU-0201

Water Quality Trends and Status by Station

Mean Seasonal Water Quality Values

APPENDIX B. WMU-0202

Water Quality Trends and Status by Station

Mean Seasonal Water Quality Values

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